Course descriptions

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COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-912/22	BSc Seminar

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 6.

Educational level: I.

Prerequisites:

Course requirements:
During the semester, the student can get 100% points, for active participation in seminars (50%) and for a model presentation of the bachelor's thesis at the end of the semester (50%).
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 100% / final exam 0%.

Learning outcomes:
The student will be informed about the basic requirements for the content and formal aspects of the bachelor's thesis. The student will get acquainted with the citation ethics, the recommended structure of the bachelor's thesis and bibliography construction. The student will have the opportunity to present the results of the bachelor's research at the end of the semester.

Class syllabus:
Basic requirements for content and formal processing of the bachelor's thesis. Aims and goals of the research. The recommended structure of the bachelor's thesis. Citation ethics. Construction of the bibliography. Stylistics of mathematical text, mathematical concepts and notation. Techniques of editing tables, figures, charts, and appendices. Submission of the bachelor's thesis. Presentation of bachelor's thesis results. Presentation and communication skills.

Recommended literature:
Directive of the Rector of Comenius University in Bratislava on the basic requirements of final theses;
lecturer's own notes and materials.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 11

A	B	C	D	E	FX
100,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Gábor Szűcs, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAMŠ/1-PMA-991/15	**Course title:** BSc Thesis Defense
Number of credits: 8	
Educational level: I.	
Course requirements: state exam Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The outcome will be the defended bachelor thesis.	
Class syllabus: Presentation of the results obtained in the bachelor thesis, answer to questions given by the referee in the report. Discussion with members of the committee on the topic of the thesis.	
State exam syllabus:	
Recommended literature: Literature will be recommended by the supervisor of the thesis.	
Languages necessary to complete the course: Slovak, English	
Last change: 13.03.2022	
Approved by: doc. RNDr. Katarína Janková, CSc.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-710/25	Banking and Insurance Law

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KAMŠ/1-PMA-710/15

Course requirements:
During the semester the student can get 100% points for one written test, which is usually written sometime during the last two weeks of the semester.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 100% / final exam 0%.

Learning outcomes:
After completing the course, the student will master the history and basic concepts of banking and insurance, as well as some parts of the law governing commercial banking and insurance business in Slovakia.

Class syllabus:
Basic terms used in the banking and insurance sector. Origin and development of banking and insurance in the world. Commercial banking and insurance market in Slovakia. Acts (in their current and complete wording) regulating the commercial insurance industry in Slovakia: Act on Insurance, Act on Compulsory Contractual Motor Vehicle Third Party Liability Insurance and other laws. Social and pension security in Slovakia. Legal regulations regulating the commercial banking sector in Slovakia in their current and complete wording. Solvency and financial stability of commercial banks and insurance companies in Slovakia and the European Union, the Basel III and Solvency II regulatory frameworks. International Financial Reporting Standards (IFRS) for commercial banks and insurance companies.

Recommended literature:
Poisťovníctvo a účtovníctvo poisťovní / Jitka Meluchová. Bratislava : Iura Edition, 2004;
Riziko ve financích a pojišťovnictví: Basel III a Solvency II / Tomáš Cipra. Praha : Ekopress, 2015;
Collection of Laws of the Slovak Republic;
EUR-Lex: EU law, the official online database of European Union law;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: Mgr. Gábor Szűcs, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-110/22	Basic Data Processing and Visualization

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary evaluation: tests (60%), project (40%)
Rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will be able to use MS Excel, they will be able to use basic and more advanced functions for data processing and basic visualization, and they will get acquainted with the VBA language.

Class syllabus:
MS Excel environment, basic mathematical functions, cell formatting. Creating and working with tables. Data processing and cleaning, working with missing data. Basic types of graphs (bar, pie, histogram, etc.). Basics of VBA.

Recommended literature:
Microsoft Excel 2016 step by step Curtis Frye / Frye C, Redmond: Microsoft Press, 2015

Languages necessary to complete the course:
Slovak, English

Notes:
Maximum number of students: 24.

Past grade distribution
Total number of evaluated students: 65

A	B	C	D	E	FX
41,54	24,62	21,54	6,15	1,54	4,62

Lecturers: Mgr. Lívia Rosová, PhD.

Last change: 28.01.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-407/22	Brain and Mind

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1., 3., 5.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Continuous assessment: presence (30%), presentation (40%), bonus assignments (30%)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The course objectives are to make the students familiar with major theories and methods of mind/ brain research.

Class syllabus:
The subject of the course is the human mind and brain from the perspective of neuroscience, computer science, psychology, and philosophy. It is mainly focused on the interdisciplinary study of consciousness: its neural correlates, neuroscience and behavioral research methods, and major theories.

Recommended literature:
S. Blackmore, E.T. Troscianko: Consciousnes. An Introduction. Routledge, third edition 2018.
M.S. Gazzaniga, R.B. Ivry, G.R. Mangun: Cognitive Neuroscience. The Biology of the Mind. W.W. Norton & company, fifth edition 2019.
J. Friedenberg, G. Silverman: Cognitive Science. An Introduction to the Study of Mind. Sage 2012.
T. Metzinger: The Ego Tunnel. The Science of the Mind and the Myth of the self. Basic Books 2009.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 263					
A	B	C	D	E	FX
49,43	14,83	12,55	11,03	4,18	7,98
Lecturers: RNDr. Barbora Cimrová, PhD., doc. PhDr. Ján Rybár, PhD.					
Last change: 04.07.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-408/22	Cognitive Laboratory

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3., 5.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Interim evaluation: presentations
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Acquisition of methods for studying various cognitive phenomena (data collection and analysis) using an online cognitive laboratory.

Class syllabus:
Demonstration of 40 standard experiments in the fields of neurocognition, mechanisms of perception, attention systems, memory processes, speech production and perception, knowledge representation (concepts and mental ideas), judgment and decision-making processes.

Recommended literature:
CogLab / Greg Francis, Ian Neath, Daniel R. VanHorn. Thomson/Wadsworth, 2014

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 106

A	B	C	D	E	FX
67,92	11,32	8,49	0,94	0,0	11,32

Lecturers: doc. PhDr. Ján Rybár, PhD.

Last change: 17.05.2024

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-730/00	Computer Statistics

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Recommended prerequisites:
Probability and statistics (2) 1-MAT-282

Course requirements:
project (teaching period), written exam using computer
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
Using the software "R" students will be able to perform basic statistical analysis of real data.

Class syllabus:
History of R and comparison with other systems. Arithmetic, logical operators. Data import and visualization, descriptive statistics. Tests of normality. Tests about location parameters, proportions, and correlation coefficients. Linear regression: estimates, tests, confidence regions, submodels, diagnostic. ANOVA. Modern methods of statistics (cluster and discriminant analysis, Monte Carlo).

Recommended literature:
Dalgaard P: Introductory Statistics with R. Springer 2008.
Anděl J: Statistické metody. Matfyzpress 2007.
Venables W N et al.: An Introduction to R. The R Foundation 2021.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 286

A	B	C	D	E	FX
45,1	14,69	8,74	12,59	11,89	6,99

Lecturers: Mgr. Ján Somorčík, PhD.

Last change: 11.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-240/15	Corporate Finance

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1)

Course requirements:
Continuous assessment: Presentation of a project on a given topic.
Examination: Written test
Grading scale: A 91%, B 81%, C 71%, D 61%, E 51%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
By the end of this course, students should be able to demonstrate an understanding of the basic principles of investment and financial decision making processes of the firm.

Class syllabus:
Introduction to issues in corporate finance. Financial ratios. Time value of money, compounding and discounting. Valuation of stocks and bonds. Investment criteria, sensitivity analysis, decision trees. Yield and risk. Portfolio theory, Capital Asset Pricing Model (CAPM). Capital Structure. Tax Shield. Financial distress and bankruptcy. Dividend policy.

Recommended literature:
Brealey, R. A., Myers, S.C.: Principles of Corporate Finace, McGraw Hill, 13th Edition, 2020
Brealey, R. A., Myers S.C.: Teorie a praxe firemních financí, Computer Press, Praha, 2000
Damodaran, A.: Corporate Finance, John Wiley and Sons, 2001
Ross, A. R., Westerfield, R.W., Jaffe, J.: Corporate Finance, McGraw Hill, 5th Edition, 1999

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 263

A	B	C	D	E	FX
26,62	19,77	17,49	16,73	16,73	2,66

Lecturers: doc. RNDr. Zuzana Chladná, Dr.

Last change: 09.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-750/22	Data Analysis and Visualization

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1)

Course requirements:
Preliminary evaluation: tests (40%), project (60%)
Rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course the students will be able to use the MS Excel environment for processing, visualizing and analyzing real data.

Class syllabus:
Mathematical functions in MS Excel. Probability distributions. Processing and visualization of the data. Excel VBA introduction. Descriptive statistics. Parameter estimation, hypothesis testing, regression analysis.
Probability distributions in MS Excel (probability, distribution, quantile functions, data generation). Descriptive statistics in MS Excel environment (sample characteristics). Advanced data vizualization methods (eg box plot, time series vizualization), Power BI. Basics of inference statistics (parameter estimation, hypothesis testing, linear regression analysis). Solver and Data Analysis add-ins.

Recommended literature:
Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava: Univerzita Komenského, 2011
Štatistika v Exceli 2007 / Jozef Chajdiak. Statis, Bratislava 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 258					
A	B	C	D	E	FX
37,21	22,48	18,99	10,85	6,2	4,26
Lecturers: Mgr. Lívia Rosová, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-741/00	Demography Statistics

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: I., II.

Prerequisites:

Course requirements:
The course assessment consists of three parts. The semester evaluation has a weight of 33% and consists of practical test. In order to meet the minimal condition to sit the final written exam, the student must obtain at least half of the possible points from the semester evaluation. During the exam period, an exam will be written on which an additional 34% of points can be obtained. The student must obtain at least half of the possible points on the written exam in order to be admitted to the oral exam. The last part of the evaluation - the oral exam - has a weight of 33%.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical test during semester 33% / final exam 67% (written and oral exam).

Learning outcomes:
After completing the course students will control the basics of demographics for the purpose of actuarial practice. They will be able to construct life tables and assess the statistical properties of demographic indicators and apply statistical methods in demographic analyzes.

Class syllabus:
Basics of demography. Demographic data, sources of demographic data. Demographic indicators. Standardization and decomposition. Probability models for the number of demographic events. Construction of life tables from statistical data. Force of mortality, mathematical modeling of the force of mortality. Multiple decrement tables. Actuarial demography.

Recommended literature:
Slovník demografických pojmov / Danuša Jurčová. Bratislava : INFOSTAT – Inštitút informatiky a štatistiky, Výskumné demografické centrum, Edícia: Akty, 2005, ISBN 80-85659-40-9 [available on the Internet];
Methods of Demographic Analysis / Farhat Yusuf, Jo. M. Martins, David A. Swanson. First Edition, Dordrecht : Springer Netherlands, 2014, ISBN 978-94-007-6784-3;

Fundamentals of Demographic Analysis: Concepts, Measures and Methods / Gordon A. Carmichael. First Edition, Cham : Springer International Publishing, Switzerland, 2016, ISBN 978-3-319-23255-3;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 271

A	B	C	D	E	FX
41,7	13,65	16,24	11,07	13,65	3,69

Lecturers: Mgr. Gábor Szűcs, PhD., Mgr. Matúš Padyšák, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-310/00	Difference and Differential Equations

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-EFM-210/00 - Mathematical Analysis (3) and (FMFI.KAG/1-MAT-160/15 - Linear Algebra and Geometry (2) or FMFI.KAG/1-EFM-160/12 - Linear Algebra and Geometry (2))

Course requirements:
Continuous assessment: Written exam and homework
Exam: Written and oral exam
Approximate rating: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
Students master basic methods of modelling the dynamical processes with discrete and continuous time variable using difference and differential equations, with special regard to their application in economics and finance.

Class syllabus:
Difference equations: One-dimensional and higher-dimensional linear equations, affine and nonlinear equations, solutions and their stability.
Differential equations: One-dimensional linear, affine and nonlinear equations. Higher-dimensional linear equations. General theory of differential equations. One-dimensional and two-dimensional autonomous equations. Integrals of differential equations, conservative systems with one degree of freedom.

Recommended literature:
P. Brunovský: Dynamické systémy a diferenciálne rovnice, text MFFUK
www.iam.fmph.uniba.sk/skripta/brunovsky
M. Greguš, V. Šeda, M. Švec: Obyčajné diferenciálne rovnice, Alfa 1985
J. T. Sandefur: Discrete dynamical systems. Clarendon 1990
G. Gandolfo: Economic Dynamics, Springer

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 671					
A	B	C	D	E	FX
29,51	24,89	17,88	15,8	10,73	1,19
Lecturers: doc. RNDr. Peter Guba, PhD., doc. Mgr. Pavol Bokes, PhD.					
Last change: 11.03.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MAT-140/00	Discrete Mathematics (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
Work during the semester: 2 midterm exams (each 18%), homework (14%)
Final exam: written exam (15 points needed to pass the written exam)
Approximate grade scheme: A 85%, B 70%, C 55%, D 45%, E 35%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Students will acquire skills in manipulating, describing and searching for the properties of simple mathematical objects (propositions, sets, relations) with emphasis on their exact symbolic notation, details, correct interpretation, models, examples, counterexamples.
Students will improve in abstract reasoning, which uses formal logical arguments, relational properties of objects, and quantifiers (existential and universal).

Class syllabus:
Types of proofs in mathematics, propositions, propositional functions. Propositional calculus, predicate logic. The basic set operations, relations, partial orders, mappings. Finite and infinite sets, countable and uncountable sets. Cardinal numbers.

Recommended literature:
Množiny a všeličo okolo nich / Lev Bukovský. Košice : Univerzita Pavla Jozefa Šafárika, 2005
Diskrétna matematika 1 : Úvod do teórie množín, teórie booleovských funkcií a matematickej logiky / Daniel Olejár, Škoviera Martin. Bratislava : Univerzita Komenského, 1992

Languages necessary to complete the course:
English, Slovak

Notes:

Past grade distribution
Total number of evaluated students: 1049

A	B	C	D	E	FX
10,77	11,25	16,87	27,17	22,88	11,06

Lecturers: Mgr. Martin Niepel, PhD., prof. RNDr. Róbert Jajcay, DrSc., RNDr. Jana Chalmovianská, PhD.
Last change: 14.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-380/00	Econometrics

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: I., II.

Prerequisites: FMFI.KAMŠ/1-EFM-330/00 - Statistical Methods or FMFI.KAMŠ/2-MMN-380/22 - Time Series Analysis or FMFI.KAMŠ/2-PMS-107/15 - Regression Models or FMFI.KAMŠ/1-DAV-303/20 - Statistical Methods

Recommended prerequisites:
Statistical methods 1-EFM-330 or Statistical methods 1-DAV-303 or Computer statistics 2-MMN-106

Course requirements:
Continuing evaluation: project (10%) and test (20%); at least 10% out of 30% are needed to proceed to the final exam
Exam: written exam
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Students are able to perform standard linear regression analysis and also are able to apply it in real econometric research. They also understand the mathematics behind these methods, being a necessary condition for further studies in this subject.

Class syllabus:
Linear regression, the geometry behind it, and LS-estimators of parameters. Decomposition of the Total Sum of Squares, coefficients of determination, and the Akaike information criterion. Properties of the parameter estimators and of the error term variance estimator. Gauss-Markov theorem. Tests of linear hypotheses about parameters. Restricted regression. Model specification errors and their diagnostic. Dummy variables. Generalized least squares. Heteroscedasticity: testing for and dealing with. Autocorrelation: testing for and dealing with.

Recommended literature:
Johnston J, DiNardo J: Econometric methods 4th ed. McGraw Hill 1997;
Greene W: Econometric Analysis 8th ed. Pearson 2017;
Zvára K: Regrese. MatfyzPress, 2008.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1330

A	B	C	D	E	FX
28,87	16,17	17,97	16,99	16,77	3,23

Lecturers: Mgr. Ján Somorčík, PhD., Mgr. Samuel Rosa, PhD., Mgr. Pál Somogyi, PhD.

Last change: 25.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-120/17	Economics (1)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Continuous test.
Final test-
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Students will understand the basics of neoclassical, textbook economics.

Class syllabus:
Market forces - demand, supply.
Costs, cost function.
Basic market models.
Perfect competition.
Monopoly.
Monopolistic competition.
Oligopoly markets.
Pricing.
The role of government in a market economy.

Recommended literature:
Michael Baye: Managerial Economics and Bussines Strategy.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 672

A	B	C	D	E	FX
15,48	19,79	17,56	20,68	13,24	13,24

Lecturers: doc. RNDr. Ján Boďa, CSc.

Last change: 09.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-140/17	Economics (2)

Educational activities:
Type of activities: lecture
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 2.

Educational level: I.

Prerequisites:

Antirequisites: FMFI.KMANM/1-MMN-256/22

Course requirements:
Mid-term test, final test.
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Understanding the basics of how the country's economy as a whole works. The role of government and central bank.

Class syllabus:
Gross domestic product. Total demand in the economy. IS-LM model. Government fiscal policy. Central bank monetary policy. Labor market. Total supply in the economy. Inflation. AS-AD model. Open economy.

Recommended literature:
Olivier Blanchard: Macroeconomics

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 411

A	B	C	D	E	FX
22,14	26,76	21,41	14,84	9,25	5,6

Lecturers: doc. RNDr. Ján Boďa, CSc.

Last change: 09.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-233/13	English Conversation Course (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3., 5.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
tests, presentations, essays
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational English as well as English for specific purposes appropriate for university students. This course is a follow up of the previously taught ESP course.

Class syllabus:
This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge.

Recommended literature:
Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 318

A	B	C	D	E	FX
77,36	8,81	4,4	1,26	0,94	7,23

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-234/13	English Conversation Course (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4., 6.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
tests, oral presentations, essays
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Continual improvement of all language skills focused on communication/speaking, listening comprehension and writing. The emphasis is on discourse, lexicology and morphology, word-bank broadening of communicational/spoken English as well as English for specific purpose appropriate for university students. This course is a follow up of the Conversational English course 1.

Class syllabus:
This course's focus is to broaden spoken/communicational English for students with B2/C1 level of English knowledge(Upper-Intermediate/Lower Advanced).

Recommended literature:
Appropriate study material is supplied based on the participants'level of English by the lecturer. (Sources- The Guardian, The Herald Morning Sun. The Nine News, The West Australian, BBC News and podcasts, CNN podcasts).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 201

A	B	C	D	E	FX
82,09	8,96	2,49	1,0	0,0	5,47

Lecturers: Mgr. Aneta Barnes

Last change: 11.04.2024
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-131/00	English Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

Class syllabus:
On entering the first semester, students´ knowledge of English is tested and they are divided into groups according to the results of the placement test. In the groups of pre-intermediate and intermediate students, fundamentals of technical English are taught. Advanced students take classes of technical English for their field of study: English for mathematics, for physics, for computer science, English for management and economic and financial mathemathics.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 7538

A	B	C	D	E	FX
29,53	22,82	18,16	12,52	7,87	9,1

Lecturers: Mgr. Eva Foltánová, Mgr. Ing. Jana Kočvarová, Mgr. Ľubomíra Kožehubová, Mgr. Alexandra Maďarová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD., Mgr. Katarína Hromadová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-132/00	English Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The objective of the subject is to provide the students with experience and knowledge of technical English and thus make them ready to use English sources of information for later study and professional career.

Class syllabus:
This is a continuation of the course English (1) designed for pre-intermediate students. Fundamental vocabulary is presented through selected topics in mathematics, physics and informatics. The lessons also contain revision of elementary grammar. Generally, it is a necessary preliminary to advanced programs.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
The textbook has not been published. It is at students' disposal in an electronic format.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1733

A	B	C	D	E	FX
22,1	20,95	23,83	14,77	11,08	7,27

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD.
Last change: 20.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-231/00	English Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The objective of the classes is to provide the students with knowledge of technical English in their field of study and experience with technical English sources sufficient to make the able to use technical language for their later study and professional purposes.

Class syllabus:
The subject continues the program of English (2). Students take classes of special English for their field of study: English for mathematics, English for physics, English for computer science, English for management and economic and financial mathemathics.
The subject requires advanced knowledge of general English.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1461

A	B	C	D	E	FX
15,47	18,96	22,72	18,21	18,14	6,5

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD., Mgr. Katarína Hromadová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-232/10	English Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Examination: an examination consisting of a written and an oral part.
Grades: A 93%, B 85%, C 77%, D 70%, E 65%
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/skuska-z-predmetu-anglicky-jazyk-4/
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
After completing the course, students will be able to work independently with professional literature in English

Class syllabus:
Students take classes of special English for their field of study: English for mathematics, English for physics, English for computer science, English for management and economic and financial mathemathics.

Recommended literature:
Anglický jazyk pre študentov FMFI UK : Kurz pre mierne pokročilých / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Aplikovaná matematika / Alexandra Maďarová, Ľubomíra Kožehubová.- učebnica publikovaná online
Anglický jazyk pre študentov FMFI UK : Matematika: Alexandra Maďarová, Eva Foltánová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Fyzika / Alena Zemanová.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.
Anglický jazyk pre študentov FMFI UK : Informatika / Elena Klátiková.
Učebnica je nepublikovaná, k dispozícii v elektronickej podobe na webovej stránke KJP.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 4299

A	B	C	D	E	FX
25,17	28,15	21,61	11,82	6,05	7,21

Lecturers: Mgr. Ing. Jana Kočvarová, Mgr. Alexandra Maďarová, Mgr. Ľubomíra Kožehubová, Mgr. Eva Foltánová, Mgr. Aneta Barnes, Mgr. Simona Dobiašová, PhD., Mgr. Valéria Medárová, PhD.

Last change: 16.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-370/00	Financial Mathematics

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 5.

Educational level: I., II.

Prerequisites: FMFI.KAMŠ/1-EFM-250/00 - Mathematical Analysis (4) or FMFI.KAMŠ/1-DAV-102/20 - Calculus (1) or FMFI.KMANM/1-MAT-250/22 - Mathematical Analysis (4)

Course requirements:
Evaluation during the semester: Project, written test, activity during exercises
Written exam. Voluntary oral examination to improve the final evaluation.
Informative evaluation scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course, students will understand the basic principles of interest rate theory and bond investment management. They will also get acquainted with the principles of stock portfolio management. In the last part of the lecture, they will learn to price derivatives of the European and American type using binomial trees and will also get acquainted with Black-Scholes formulas for pricing put and call options.

Class syllabus:
Coupon and zero-coupon bonds, term structure of interest rates, bootstrap method, yield to maturity, forward rates, duration.
Risk aversion, properties of utility functions, utility functions and mean-variance analysis, the problem of Markowitz, Capital Asset Pricing Model (CAMP).
Binomial tree model, risk-neutral probabilities, risk-neutral pricing formula, Black-Scholes formula, pricing of american options.

Recommended literature:
Baxter M., Rennie A.: Financial Calculus
Hull J.: Options, Futures and Other Derivatives
Luenberger D.: Investment Science

Languages necessary to complete the course:
English, Slovak

Notes:

Past grade distribution Total number of evaluated students: 756					
A	B	C	D	E	FX
58,86	20,77	10,71	6,08	2,78	0,79
Lecturers: doc. Mgr. Igor Melicherčík, PhD., Mgr. Radoslav Hurtiš, PhD.					
Last change: 20.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-141/00	French Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
French language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of French.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 499

A	B	C	D	E	FX
48,5	19,44	16,63	7,82	2,0	5,61

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-142/00	French Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject continues the program of French language (1) and provides courses of essential and intermediate French language.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 307

A	B	C	D	E	FX
45,6	22,48	16,94	8,79	2,28	3,91

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-241/00	French Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French language, covering not only general, but also technical language.

Recommended literature:
Capelle Guy, Menand Robert: Le Nouveau taxi 1, Hachette FLE Paris, France 2009, ISBN 978-2-01-155548 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 128

A	B	C	D	E	FX
48,44	24,22	17,19	5,47	0,78	3,91

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-242/00	French Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
The subject provides a course of intermediate French covering not only general, but also technical French language.

Recommended literature:
Menand Robert: Le Nouveau taxi 2, Hachette FLE, Paris, France 2009, ISBN 978-2-01-155551 - 9

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 79

A	B	C	D	E	FX
43,04	32,91	16,46	2,53	1,27	3,8

Lecturers: Mgr. Ľubomíra Kožehubová

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-530/00	General Insurance Theory

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Course requirements:
During the semester the student can obtain 33% of the assessment for one written test. In order to meet the minimal condition to sit the final written exam, it is necessary to obtain at least half of the points from the semester test. To successfully complete the course, it is necessary to get at least half of the points from the exam too, which has a weight of 67%.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 33% / final exam 67%.

Learning outcomes:
The student will be able to use basic methods of calculating insurance premiums and technical provisions in non-life insurance. The student will also get acquainted with bonus-malus systems and credibility theory.

Class syllabus:
General premium principles and their properties. Utility functions, premium principle of equivalent utility. Bonus-malus schemes and No-Claim Discount (NCD) systems. Credibility theory. American and Bayesian approach — various credibility models. Estimation of technical provisions in non-life insurance, run-off triangles: chain-ladder method, separation method and other methods.

Recommended literature:
Aplikovaná poistná štatistika / Viera Pacáková. Bratislava : Iura Edition, 2004;
Modern Actuarial Risk Theory Using R / Rob Kaas, Marc Goovaerts, Jan Dhaene, Michel Denuit. Second Edition, Heidelberg : Springer-Verlag, 2008;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 228					
A	B	C	D	E	FX
21,49	18,42	26,32	13,6	14,91	5,26
Lecturers: Mgr. Gábor Szűcs, PhD., Mgr. Lívia Rosová, PhD.					
Last change: 12.12.2025					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-151/00	German Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Class syllabus:
German language is taught at three levels: beginner, intermediate and advanced. Students opt for one of them depending on whether they need to learn the fundamentals or maintain and/or improve their previous knowledge.
This course's focus is to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 874

A	B	C	D	E	FX
38,33	24,71	18,42	8,81	2,86	6,86

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-152/00	German Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
To master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Class syllabus:
German language is taught at two levels: beginner and intermediate. Students opt for one of them depending on whether they wish to obtain the fundamentals of the language or wish to maintain and/or improve previous knowledge of German.
This course’s focus is to to master the fundamentals of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency)

Recommended literature:
Appropriate study material is supplied by teacher based on the participants’level of German proficiency

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 542

A	B	C	D	E	FX
38,01	19,56	19,56	12,36	3,51	7,01

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-251/00	German Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)

Class syllabus:
The course is a follow-up to the German language (1,2). The subject provides a course of intermediate or advanced German language.
This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 191

A	B	C	D	E	FX
45,03	23,04	19,37	6,81	2,09	3,66

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-252/00	German Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Master the basics of general language and basic professional terminology of individual fields of study (depending on the advanced level of students)

Class syllabus:
The course is a follow-up to the German language (1-3). It provides a course of intermediate and advanced German language.
This course's focus is to deepen the knowledge of the common language and basic technical terms of particular fields of study (depending on the student's level of German proficiency).

Recommended literature:
Appropriate study material is supplied by teacher based on the participants'level of German proficiency.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 104

A	B	C	D	E	FX
44,23	22,12	14,42	10,58	3,85	4,81

Lecturers: Mgr. Alexandra Maďarová, Mgr. Simona Dobiašová, PhD.

Last change: 05.09.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-MXX-491/22	Inclusive Approaches to Education of Students with Special Educational Needs

Educational activities:
Type of activities: seminar
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Continuous assessment: active participation in class (elaboration of assigned tasks, participation in discussions)
An exam: -
Indicative assessment level: e.g. A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student:
- They will get acquainted with the basic characteristics of types of health disadvantage (HR) and will know the consequences of HR on education.
- Gain personal experience from meetings with people with disabilities and will be able to explain and apply the rules of communication with them.
- Can characterize the forms of education of students with SEN and assess the possibilities of their pedagogical, technical and human support, which positively affect the success of education.

Class syllabus:
- Characteristics of basic concepts.
- Disability models.
- Disability legislation.
- Human, communication, information and architectural barriers.
- Impact of disability on education.
- Segregation - integration - inclusion.
- Information access technologies for people with disabilities.
- Possibilities and limits of creating equal conditions for the education of pupils with specific educational needs.
- Inclusive school - education for all.
- The importance of education for the social inclusion of people with disabilities.

Recommended literature:

- Lechta, V. (ed): Inkluzivní pedagogika. Praha: Portál, 2016, ISBN 978-80-262-1123-5
- Slowík, J.: Komunikace s lidmi a postižením. Praha: Portál, 2010, ISBN 978-80-7367-691-9
- Kol. autorov: Od integrácie k inklúzii. VÚDPaP: Bratislava, 2018, ISBN 978-80-89698-27-1

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 124

A	B	C	D	E	FX
76,61	17,74	4,03	0,0	0,0	1,61

Lecturers: Mgr. Ľudmila Hlinová

Last change: 15.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-911/22	Individual Work on BSc Thesis

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites:

Course requirements:
Evaluation based on: assessment by the supervisor
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student will choose the topic of his bachelor thesis and will have the basic structure of the thesis.

Class syllabus:
Individual study of the literature recommended by the supervisor of the thesis. Work on the problem stated by the supervisor, consultations with the supervisor. Writing down of the results of the thesis with respect to the given standards.

Recommended literature:
The literature is recommended by the supervisor.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 85

A	B	C	D	E	FX
61,18	25,88	5,88	1,18	5,88	0,0

Lecturers: doc. RNDr. Katarína Janková, CSc.

Last change: 13.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAMŠ/1-PMA-961/15	**Course title:** Insurance and Financial Mathematics
Number of credits: 2	
Educational level: I.	
Course requirements: Evaluation based on: assessment by the committee for state exams. Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50% Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The student passes the state exam from insurance and financial mathematics.	
Class syllabus: The student draws questions from a given field of questions from profile courses. After a short preparation he answers the questions and additional questions of the members of the committee.	
State exam syllabus:	
Recommended literature: Modely v životnom a neživotnom poistení / Rastislav Potocký. Bratislava : Statis, 2012 Finančná matematika / Rastislav Potocký. Bratislava : Univerzita Komenského, 2000	
Languages necessary to complete the course: Slovak, English	
Last change: 13.03.2022	
Approved by: doc. RNDr. Katarína Janková, CSc.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-310/00	Insurance Mathematics (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1) and FMFI.KAMŠ/1-EFM-240/15 - Corporate Finance

Course requirements:
During the semester, the student can get 50% of the assessment for one written test. In order to meet the minimal condition to sit the final written exam, it is necessary to obtain at least half of the points from the test. To successfully complete the course, it is necessary to get at least half of the points from the exam too, which has a weight of 50%.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 50% / final exam 50%.

Learning outcomes:
After completing the course, the student receives an overview of the classical life insurance products, and net and gross premium calculation and methods of reserving. The student will be able to valuate basic life insurance products.

Class syllabus:
General principles of life insurance. Compounding and discounting. Deterministic approach. Net premium principle. Basic insurance products: pure endowment, assurances (whole life insurance, term insurance, deferred insurance), endowment, insurance products with variable sum insured. Annuities (whole life, term, deferred, with variable benefits). Net and gross premiums. Policy values, loss function, prospective net premium reserves, gross premium reserve. Surrender values and paid-up values. Alterations to policies.

Recommended literature:
Life Insurance Mathematics / Hans U. Gerber. Heidelberg : Springer, 1997, ISBN 978-3-662-03460-6;
Introduction to Insurance Mathematics / Annamaria Olivieri, Ermanno Pitacco. Cham : Springer, 2015, ISBN: 3319213768;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 235

A	B	C	D	E	FX
18,72	21,28	26,38	20,0	11,91	1,7

Lecturers: Mgr. Gábor Szűcs, PhD., Mgr. Matúš Padyšák, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-320/00	Insurance Mathematics (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-PMA-310/00 - Insurance Mathematics (1)

Course requirements:
During the semester, the student can get 50% of the assessment for one written test. In order to meet the minimal condition to sit the final written exam, it is necessary to obtain at least half of the points from the test. To successfully complete the course, it is necessary to get at least half of the points from the exam too, which has a weight of 50%.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 50% / final exam 50%.

Learning outcomes:
After completing the course, the student will master the cash-flow model of the life insurance, profit testing and calculation techniques of the present value of future profits, profit margin, internal rate of return and discounted payback period. The student will be able to evaluate unit-linked insurance products.

Class syllabus:
Risk pooling in life insurance. The cash-flow model and profit testing. Profit vector and profit signature. Measures of profitability: present value of future profits, profit margin, internal rate of return, discounted payback period. Unit linked insurance plans (ULIP).

Recommended literature:
Life Insurance Mathematics / Hans U. Gerber. Heidelberg : Springer-Verlag, 1997;
Introduction to Insurance Mathematics / Annamaria Olivieri, Ermanno Pitacco. Cham : Springer, 2015, ISBN: 3319213768;
Modely v životnom a neživotnom poistení / Rastislav Potocký. Bratislava : Statis, 2012;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 214					
A	B	C	D	E	FX
34,11	21,03	26,17	10,75	7,48	0,47
Lecturers: Mgr. Gábor Szűcs, PhD., Mgr. Matúš Padyšák, PhD.					
Last change: 12.12.2025					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-511/22	Introduction to University-level Mathematics (1)

Educational activities:
Type of activities: course
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: warm-ups (1/3 of the assessment) and homework (2/3 of the assessment) during the semester. It is necessary to obtain at least 50% from each assignment.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will learn to formulate their own thoughts, argue and prove claims mathematically accurately orally and verbally. They will also consolidate and supplement the knowledge of high school mathematics needed in their further studies.

Class syllabus:
Classes give an introduction to logic, proof techniques and a variety of example problems that illustrate different aspects of mathematical proof. Particular emphasis is given to teaching fundamentals of how to communicate thoughts rigorously: both in an oral fashion and in a written form. Classes also enable students to consolidate their learning and mathematical background to help follow the Mathematical Analysis and Linear Algebra courses. Topics cover also algebraic expression, linear and quadratic function, real functions of one variable and their properties.

Recommended literature:
Kubáček, Z, Žabka, J: Seminár z matematiky, Zbierka úloh s riešeniami, 1. časť. , 2017.
Kubáček, Z, Žabka, J: Seminár z matematiky, Zbierka úloh s riešeniami, 2. časť., 2018.
P.J. Eccles An introduction to mathematical reasoning, Cambridge University Pres, 2007.
D. Solow, How to Read and Do Proofs, Wiley, 2014

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution Total number of evaluated students: 132					
A	B	C	D	E	FX
63,64	23,48	4,55	1,52	2,27	4,55
Lecturers: Mgr. Jana Szolgayová, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-512/22	Introduction to University-level Mathematics (2)

Educational activities:
Type of activities: course
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: warm-ups and homework during the semester. It is necessary to obtain at least 50% from each assignment.
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will learn to formulate their own thoughts, argue and prove claims mathematically accurately orally and verbally. They will also consolidate and supplement the knowledge of high school mathematics needed in their further studies.

Class syllabus:
Classes enable students to consolidate their learning and mathematical background to help follow the Mathematical Analysis and Linear Algebra courses. Particular emphasis is given to teaching fundamentals of how to communicate thoughts rigorously: both in an oral fashion and in a written form. Topics cover analytical geometry, curves of the second order, classification of the curves of the second order, equivalence relations, complex numbers and their properties, polar form of complex numbers, powers and roots of complex numbers

Recommended literature:
Kubáček, Z, Žabka, J: Seminár z matematiky, Zbierka úloh s riešeniami, 2. časť., 2018.
Kubáček, Z, Žabka, J: Seminár z matematiky, Zbierka úloh s riešeniami, 3. časť., 2020.
D.G. Zill, P.D. Shanahan Comlex analysis, Jones and Bartlett Publishers, 2003.
D. Solow, How to Read and Do Proofs, Wiley 2014.

Languages necessary to complete the course:
Slovak

Notes:

Past grade distribution
Total number of evaluated students: 89

A	B	C	D	E	FX
56,18	21,35	8,99	5,62	0,0	7,87

Lecturers: Mgr. Jana Szolgayová, PhD.

Last change: 17.02.2026

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/1-AIN-406/22	Language and Cognition

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 2., 4., 6.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Continuous assessment: presentations, bonus assignments
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Acquisition of the most important current theories and methods of studying natural language and cognitive processes.

Class syllabus:
The course focuses on the most important aspects of natural language research (the most complex cognitive function): basic properties of language (arbitrariness, generative productivity, dynamism, structuring at many levels), mechanisms of speech production and perception, language acquisition, innate and acquired factors of language development.

Recommended literature:
G. Dorren: Babel. Around the World in 20 Languages. Profile Books, 2019
S. Pinker: Language Instinct. ſBrilliance Audio, 2014
S. Pinker: The Stuff of Thought. Language as a Window Into Human Nature. Penguin Books 2008
S. Pinker: Words and Rules. The lngredients of Language. Basic Books 2015

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 172

A	B	C	D	E	FX
37,79	23,84	15,12	11,05	5,23	6,98

Lecturers: doc. PhDr. Ján Rybár, PhD.

Last change: 17.05.2024
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MAT-120/15	Linear Algebra and Geometry (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: 2 tests and 2 presentations at tutorials (together 30% of the overall mark), the student has to have at least mark E to be admitted to the exam
Exam: a test and an oral exam (35% and 35% of overall mark)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Students will acquire practical skills in solving and in qualitative analysis of systems of linear equations; they will master the basics of the theory of vector spaces and linear maps.
Students will improve in proving mathematical statements and deriving properties of mathematical objects, they will advance in the ability to argue in the language and style of university mathematics.

Class syllabus:
Number systems. Functions. Groups, rings and fields. Vector spaces. Gaussian elimination method for solving systems of linear equations. Matrices and linear maps. Solvability of a system of linear equations and the structure of the set of its solutions. Determinants and their use. Euclidean vector spaces. Orthogonal projection onto a subspace of a Euclidean vector space.

Recommended literature:
Prednášky z lineárnej algebry a geometrie / Július Korbaš, Štefan Gyurki. Vydavateľstvo UK, Bratislava, 2013
Lineárna algebra a geometria : Cesta z troch rozmerov s presahmi do príbuzných odborov / Pavol Zlatoš. Bratislava : Albert Marenčin, 2011; electronic version available at http://thales.doa.fmph.uniba.sk/zlatos/la/LAG_A4.pdf

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 260					
A	B	C	D	E	FX
20,77	15,38	17,69	16,92	16,15	13,08
Lecturers: doc. Mgr. Tibor Macko, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MAT-160/15	Linear Algebra and Geometry (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KAG/1-MAT-120/15 - Linear Algebra and Geometry (1)

Course requirements:
Continuous assessment: 2 tests and 2 presentations at tutorials (together 30% of the overall mark), the student has to have at least mark E to be admitted to the exam
Exam: a test and an oral exam (35% and 35% of overall mark)
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
Students will learn the basics of affine geometry, respectively affine-euclidean spaces, deepen and expand knowledge about linear maps (transformations), master the basics of the theory of quadratic forms and their geometric applications and the basics of multilinear algebra.
Students will improve in proving mathematical statements and deriving properties of mathematical objects, they will be able to argue in the language and style of university mathematics.

Class syllabus:
Affine spaces and affine subspaces (linear varieties); orientation. Afinne-Euclidean space. Vector product and triple product of vectors; applications. Linear transformations. Eigenvalues and eigenvectors. Bilinear and quadratic forms. Second order curves; applications of the theory of quadratic forms. Dual vector space. Tensor product of vector spaces.

Recommended literature:
Prednášky z lineárnej algebry a geometrie / Július Korbaš, Štefan Gyurki. Vydavateľstvo UK, Bratislava, 2013
Lineárna algebra a geometria : Cesta z troch rozmerov s presahmi do príbuzných odborov / Pavol Zlatoš. Bratislava : Albert Marenčin, 2011; elektronická verzia dostupná na http://thales.doa.fmph.uniba.sk/zlatos/la/LAG_A4.pdf

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 205					
A	B	C	D	E	FX
26,34	20,0	12,68	18,54	14,63	7,8
Lecturers: RNDr. Martin Sleziak, PhD., doc. Mgr. Tibor Macko, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MAT-191/00	Linear Algebra and Geometry Classes (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Homework assignments
Grading: A 90%, B 80%, C 70%, D 60%, E 50%, Fx < 50%
Scale of assessment (preliminary/final): Semester 100% (homework assignments)

Learning outcomes:
The students will acquire practical skills in various computations related to the topics of the course Linear Algebra and Geometry (1).
Discussion of problems will improve their ability to analyze problems and build coherent arguments. The students will gain better insight into why various algorithms lead to the desired results. They will also understand the limitations of these algorithms.

Class syllabus:
Topics corresponding to the individual interests of students, within the following framework: Number systems (integers, rational numbers, real numbers, complex numbers), mappings, groups, rings, fields, vector spaces, the Gaussian elimination method for solving systems of linear equations, matrices and linear mappings, solvability of a system of linear equations and structure of the solution set, determinants and their applications, Euclidean vector spaces, orthogonal projection to a subspace.

Recommended literature:
J. Korbaš: Lineárna algebra a geometria I. Univerzita Komenského, Bratislava 2003.
T. Katriňák, M. Gavalec, E. Gedeonová, J. Smítal: Algebra a teoretická aritmetika 1. Univerzita Komenského, Bratislava 1999.
G. Birkhoff, S. MacLane: Prehľad modernej algebry. Alfa, Bratislava 1979.
P. Kaprálik, J. Tvarožek: Zbierka riešených príkladov a úloh z lineárnej algebry a analytickej geometrie. ALFA,
Bratislava 1987.
A. K. Faddejev, J. S. Sominskij: Zbierka úloh z vyššej algebry. Alfa, Bratislava 1968.
A. I. Kostrikin, Yu. I. Manin: Linear Algebra and Geometry. Gordon & Breach, New York 1989.
I. V. Proskurjakov: Problems in Linear Algebra. Mir, Moscow 1978.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 633

A	B	C	D	E	FX
32,86	18,64	17,06	15,32	10,11	6,0

Lecturers: RNDr. Martin Sleziak, PhD., doc. Mgr. Tibor Macko, PhD., RNDr. Barbora Pokorná, PhD.

Last change: 18.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAG/1-MAT-192/00	Linear Algebra and Geometry Classes (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Homework assignments
Grading: A 90%, B 80%, C 70%, D 60%, E 50%, Fx < 50%
Scale of assessment (preliminary/final): Semester 100% (homework assignments)

Learning outcomes:
The students will acquire practical skills in various computations related to the topics of the course Linear Algebra and Geometry (2).
Discussion of problems will improve their ability to analyze problems and build coherent arguments. The students will be able to apply the standard computational algorithms and they will improve their geometric intuition.

Class syllabus:
Topics corresponding to the individual interests of students, within the following framework: Affine spaces and subspaces. Orientation. Affine spaces with an inner product. Vector product and mixed product and their applications. Selected facts on polynomials. Linear transformations (eigenvalues, eigenvectors, diagonalization, Jordan normal form). Bilinear and quadratic forms. Plane curves of the second order; applications of the theory of quadratic forms. Dual vector spaces. Multilinear forms. Tensors.

Recommended literature:
M. Hejný, V. Zaťko, P. Kršňák: Geometria 1. SPN, Bratislava 1985.
T. Katriňák, M. Gavalec, E. Gedeonová, J. Smítal: Algebra a teoretická aritmetika 1. Univerzita Komenského, Bratislava 1999.
P. Kaprálik, J. Tvarožek: Zbierka riešených príkladov a úloh z lineárnej algebry a analytickej geometrie. ALFA,
Bratislava 1987.
A. I. Kostrikin, Yu.I.Manin: Linear Algebra and Geometry. Gordon & Breach, New York 1989.
G. Birkhoff, S. MacLane: Prehľad modernej algebry. Alfa, Bratislava 1979.
I. V. Proskurjakov: Problems in Linear Algebra. Mir, Moscow 1978.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 536

A	B	C	D	E	FX
34,7	17,35	16,04	15,11	12,5	4,29

Lecturers: doc. Mgr. Tibor Macko, PhD., Mgr. Tomáš Rusin, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-110/00	Mathematical Analysis (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
For the semester, the student can get 15 points for exercises, 40 points for written exams, the final written exam has a weight of 30 points, the final oral exam weighs 15 points. The student must obtain at least 45 points from the exercises, written exams and the final written exam, at least 15 points from the final written exam and at least 5 points from the final oral exam. Grading: A (91-100 points), B (81-90 points), C (71-80 points), D (61-70 points), E (51-60 points), Fx (0-50 points).
Weight of the ongoing / final assessment: ongoing assessment 55% (15% exercise + 40% written exams) / 45% (30% final written exam, 15% final oral exam).
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
After completing the course, the student can use the apparatus of differential calculus of functions of one real variable in solving appropriate problems of theoretical and practical focus.

Class syllabus:
Real numbers, functions of real variables. Limit of the function, basic theorems on limits. Compact sets. Continuity of a function in a point and on a set, basic properties of continuous functions on intervalas and compact sets. Derivative and general rules for differentiation. Repeated differentiation. Mean value theorems. Applications of the derivative. L´Hospital´s rule. Taylor´s polynomials.

Recommended literature:
Rudin, Walter: Principles of mathematical analysis, ISBN 0-07-054235-X
Hildebrandt, Stefan: Analysis I, ISBN 3-540-42838-0
Forstter, Otto: Analysis I, ISBN 3-528-57224-8
Neubrunn, Tibor a Vencko, Jozef: Mathematical Analysis I, textbook of FMFI UK
Kubáček, Valášek: Cvičenia z Matematickej analýzy 1,2

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1059

A	B	C	D	E	FX
9,44	9,35	12,75	24,55	29,18	14,73

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Mgr. Michaela Vargová, PhD., Mgr. Július Pačuta, PhD., Mgr. Jana Havlíčková, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-150/00	Mathematical Analysis (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KMANM/1-MAT-110/00 - Mathematical Analysis (1)

Course requirements:
For the semester, the student can get 15 points for exercises, 40 points for written exams, the final written exam has a weight of 30 points, the final oral exam weighs 15 points. The student must obtain at least 45 points from the exercises, written exams and the final written exam, at least 15 points from the final written exam and at least 5 points from the final oral exam. Grading: A (91-100 points), B (81-90 points), C (71-80 points), D (61-70 points), E (51-60 points), Fx (0-50 points).
Weight of the ongoing / final assessment: ongoing assessment 55% (15% exercise + 40% written exams) / 45% (30% final written exam, 15% final oral exam).
Scale of assessment (preliminary/final): 55/45

Learning outcomes:
After completing the course, students will be able to use the apparatus of integral calculus of functions of one real variable, series and series of functions to solve appropriate computational and theoretical problems.

Class syllabus:
Antiderivatives and indefinite integrals and techniques of integration. The definite integral and its properties. Integral as a limit of integral sums. Derivatives with variable endpoints. The fundamental theorem. Mean value theorems. Applications of the integral. Series of positive terms. Absolutely and conditionally convergent series. Series of functions. Pointwise and uniform convergence. Power series. Taylor series.

Recommended literature:
Rudin, Walter: Principles of mathematical analysis, ISBN 0-07-054235-X
Hildebrandt, Stefan: Analysis I, ISBN 3-540-42838-0
Forstter, Otto: Analysis I, ISBN 3-528-57224-8
Neubrunn, Tibor a Vencko, Jozef: Mathematical Analysis I, textbook of FMFI UK
Kubáček, Valášek: Cvičenia z Matematickej analýzy 1,2, textbook of FMFI UK

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 855

A	B	C	D	E	FX
13,57	10,29	18,36	26,67	27,72	3,39

Lecturers: doc. RNDr. Zbyněk Kubáček, CSc., Dr. Hana Šmitala Mizerová, Mgr. Jana Havlíčková, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-210/00	Mathematical Analysis (3)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 3.

Educational level: I.

Prerequisites: ((FMFI.KAMŠ/1-EFM-110/00 - Mathematical Analysis (1) and FMFI.KAMŠ/1-EFM-130/00 - Mathematical Analysis (2)) or (FMFI.KMANM/1-MAT-110/00 - Mathematical Analysis (1) and FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2))) and (FMFI.KAG/1-EFM-160/12 - Linear Algebra and Geometry (2) or FMFI.KAG/1-MAT-160/15 - Linear Algebra and Geometry (2))

Course requirements:
Continuous assessment: 2 tests, evaluation of oral presentations
Examination: written and oral examination
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
To master the basics of the differential calculus of functions of several variables with emphasis on the methods used in the economic sciences. Upon completion of the course, students will acquire key competences in the field of vector mathematical analysis and finite-optimization methods.

Class syllabus:
Class syllabus:
Topic 1: Normed vector spaces (NVS).
• Norm and its properties.
• Equivalent norms.
• Examples of norms in general NVS.
• Euclidean space. Scalar product.
• Cauchy-Schwartz inequality, Young's and Minkowski inequality.
• Linear mappings and functionalities.
Topic 2: Topological properties of NVS.
• Open and closed sets in a NVS.
• Boundary of a set.
• Convergence of sequences in NVS.
• Compact sets, criteria for compactness, Heine-Borel theorem.
• Complete normed spaces, Banach and Hilbert space.
• Completions of a normed space.

• Lebesgue space.
• Contiguous set.
• Convex set in the NVS.
Topic 3: Continuity in NVS.
• Limits of functions. The definition of continuity of a function in NVS.
• Extremal properties of continuous functions on compact and contiguous subsets.
• Contractive mapping and Banach theorem on the existence of a fixed point and its applications
Topic 4: Multivariate functions.
• Relationship between multiple limit and limits of functions of more variables.
• Graph over a function of several variables.
• Convex and concave function.
• Level sets of convex functions.
Topic 5: Differentiability of functions of several variables.
• Partial derivatives of functions of several variables and their geometric interpretation.
• Partial derivatives of higher order, interchangeability of the order of differentiation.
• The derivative of a multivariate function and its geometrical interpretation.
• Relationship between derivative of a function and its partial derivatives, Jacobi matrix.
• Derivative of a composite function. Derivatives of higher order.
Topic 6: Properties of differentiable functions.
• Taylor series for multivariate function.
• Differential of a function and its use to determine the approximate value of a function.
• Gradient of a function and directional derivatives.
• Relationship between gradient and level set of a differentiable function.
• Convexity criterion for functions of several variables.
Topic 7: Extremal properties of multivariate functions.
• Tangent plane to a graph of a functions.
• Maximum and minimum of a multivariate function, local extremes. Saddle points.
• Necessary conditions for local extremes of functions of several variables.
• Sufficient conditions for local extremes and Hessian matrix of second derivatives.
• Global extremes and methods for their determination.
• Applications that lead to finding extremes of unconstrained functions.
Topic 8: Functions given implicitly.
• Examples of importance of implicit functions.
• The existence of an implicit function.
• Derivative of implicit function.
• Existence of an inverse function.
Topic 9: Extremes of a constrained multivariate function.
• Importance and application of extremes of a constrained multivariate function.
• Geometric interpretation of the extreme of a constrained multivariate function and Lagrange multipliers.
• Lagrangian.
• Necessary conditions for the existence of an extreme of a constrained function.
• Methods for determining the extreme type, some simple sufficient conditions for finding constrained minimum/maximum.
• General sufficient condition for an extreme of a constrained function and bounded Hessian.

Recommended literature:

Online zbierka príkladov a úloh a základov teórie:
Martin Kollár, Ľubica Kossaczká, Daniel Ševčovič: Diferenciálny a integrálny počet funkcií viac premenných v príkladoch

Knižničné a edičné centrum FMFI UK, 192 pp. (in Slovak). ISBN: 978-80-89186-54-9
http://www.iam.fmph.uniba.sk/institute/sevcovic/knihy/
BARNOVSKÁ M., SMÍTALOVÁ K.: (1991) Matematická analýza III, Skriptá UK, Bratislava.
BARNOVSKÁ M., SMÍTALOVÁ K.: (1984) Matematická analýza IV, Skriptá UK, Bratislava.
KLUVÁNEK, I., MIšÍK, L., ŠVEC M.: (1961) Matematika I, II, SVTL Bratislava.
DEMIDOVIČ, B.P.: (1977) Sbornik zadač i upražnenij po matematičeskomu analizu, Moskva Nauka (v ruštine).

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 836

A	B	C	D	E	FX
30,14	30,14	25,0	9,57	4,55	0,6

Lecturers: prof. RNDr. Daniel Ševčovič, DrSc., RNDr. Ľubica Kossaczká, CSc., Mgr. Martin Kollár, PhD.

Last change: 12.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-250/00	Mathematical Analysis (4)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 4 / 2 **per level/semester:** 52 / 26
Form of the course: on-site learning

Number of credits: 8

Recommended semester: 4.

Educational level: I.

Prerequisites: (FMFI.KAMŠ/1-EFM-130/00 - Mathematical Analysis (2) or FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2)) and FMFI.KAMŠ/1-EFM-210/00 - Mathematical Analysis (3)

Course requirements:
Continuous assessment: 2 written tests, evaluation of oral presentations
Examination: written and oral examination
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
To master the basics of the integral calculus of functions of multiple variables, with emphasis on the methods used in financial mathematics. Upon completion of the course students will acquire key competences in the field of vector mathematical analysis.

Class syllabus:
Class syllabus:
Topic 1: Fourier series.
• Decomposition of a function into Fourier series.
• Formulas for the Fourier coefficients
• Complex form of trigonometric series.
• Periodic extension of a functions.
• Pointwise convergence of Fourier series. Fejer kernel.
• Bessel inequality and Parseval equality.
• Odd and even extentions of functions and their decomposition into Fourier series.
• Applications of the Fourier series.
• Solution to the boundary value problem for ordinary differential equations using Fourier series.
Topic 2: Parametric integrals.
• Definition of a parametric integral.
• Examples of parametric integrals.
• Continuity and differentiability of parametric integrals.
• Parametric integrals of unbounded functions.
• Parametric integrals on unbounded intervals.

• Method of calculation for parametric integrals.
• Gamma, Beta functions and their properties.
Topic 3: Riemann integral of multivariate function.
• Riemann integral on a bounded area.
• Properties of the integral of a multivariate function.
• Fubini theorem.
Topic 4: Substitution method for integrating functions of several variables.
• Linear and non-linear coordinate transformation.
• Jacobi matrix of a transformation and the geometric interpretation of its determinant.
• Substitution theorem for integrals of multivariate functions.
• Polar and spherical coordinates.
• Method of calculation of multidimensional integrals by transformation of variables.
Topic 5: Curve and surface integrals.
• Integrating functions defined on curves.
• Curve integral: kind I. and II..
• Integrating functions defined on surfaces.
• Surface integrals.
• Relationship between, curve, surface and volume integrals.
• Green's formula of integration by parts.
• Ostrogradskij-Gauss theorem and Stokes formula.

Recommended literature:

M. Barnovská, K. Smítalová, Matematická analýza IV, Skriptum UK v Bratislave, 1984.
V. Ďurikovič, Mat. Analýza 4, Integrálny počet v R^n, UK, 1997.
Online zbierka príkladov a úloh a základov teórie:
Martin Kollár, Ľubica Kossaczká, Daniel Ševčovič: Diferenciálny a integrálny počet funkcií viac premenných v príkladoch
Knižničné a edičné centrum FMFI UK, 192 pp. (in Slovak). ISBN: 978-80-89186-54-9
http://www.iam.fmph.uniba.sk/institute/sevcovic/knihy/
BARNOVSKÁ M., SMÍTALOVÁ K.: (1991) Matematická analýza III, Skriptá UK, Bratislava.
BARNOVSKÁ M., SMÍTALOVÁ K.: (1984) Matematická analýza IV, Skriptá UK, Bratislava.
KLUVÁNEK, I., MIšÍK, L., ŠVEC M.: (1961) Matematika I, II, SVTL Bratislava.
DEMIDOVIČ, B.P.: (1977) Sbornik zadač i upražnenij po matematičeskomu analizu, Moskva Nauka (v ruštine).

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 796

A	B	C	D	E	FX
39,32	32,16	16,33	8,04	3,27	0,88

Lecturers: prof. RNDr. Daniel Ševčovič, DrSc., Mgr. Martin Kollár, PhD., RNDr. Ľubica Kossaczká, CSc.

Last change: 12.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-710/00	Mathematical Analysis Classes (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: solving tasks at the board, elaboration of controlled homework, assessment from compulsory exercise
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will be able to calculate problems in the field of differential calculus of a real function of one real variable.

Class syllabus:
Real numbers, functions of real variables. Limit of the function, basic theorems on limits. Compact sets. Continuity of a function in a point and on a set, basic properties of continuous functions on intervalas and compact sets. Derivative and general rules for differentiation. Repeated differentiation. Mean value theorems. Applications of the derivative. L´Hospital´s rule. Taylor´s polynomials.

Recommended literature:
Cvičenia z matematickej analýzy I / Zbyněk Kubáček, Ján Valášek. Bratislava : Univerzita Komenského, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 735

A	B	C	D	E	FX
39,86	14,69	14,01	11,84	10,61	8,98

Lecturers: RNDr. Kristína Rostás, PhD., Mgr. Július Pačuta, PhD., Mgr. Michaela Vargová, PhD., Mgr. Dušan Daniel
Last change: 24.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-720/00	Mathematical Analysis Classes (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: solving tasks at the board, elaboration of controlled homework, assessment from compulsory exercises
Indicative rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will be able to use the apparatus of integral calculus of functions of one real variable, series and series of functions to solve appropriate computational and theoretical problems.

Class syllabus:
Antiderivatives and indefinite integrals and techniques of integration. The definite integral and its properties. Integral as a limit of integral sums. Derivatives with variable endpoints. The fundamental theorem. Mean value theorems. Applications of the integral. Series of positive terms. Absolutely and conditionally convergent series. Series of functions. Pointwise and uniform convergence. Power series. Taylor series.

Recommended literature:
Cvičenia z matematickej analýzy II / Zbyněk Kubáček, Ján Valášek. Bratislava : Univerzita Komenského, 2010

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 585

A	B	C	D	E	FX
48,89	13,85	16,24	9,23	9,06	2,74

Lecturers: RNDr. Kristína Rostás, PhD., Dr. Hana Šmitala Mizerová
Last change: 24.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-530/00	Mathematical Analysis Classes (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: 3 written exams, class activity
Indicative assessment scale: A 92%, B 84%, C 76%, D 68%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will master the basics of differential calculus of functions of several real variables. They will be able to determine local and bound local extremes of functions of several real variables.

Class syllabus:
Metric spaces. Limit and continuity of a multivariable function. Differentiation of _ mappings, total differential and total derivative. Partial derivative, Taylor formula. Local and global extrema of multivariable function. Implicit functions.

Recommended literature:
Zbierka úloh z vyššej matematiky : 3. časť / Jozef Eliaš, Ján Horváth, Juraj Kajan. Bratislava : Slovenské vydavateľstvo technickej literatúry, 1967
Sbornik zadač i upražnenij po matematičeskomu analizu / B. P. Demidovič. Moskva : Fizmatgiz, 1963
Martin Kollár, Ľubica Kossaczká, Daniel Ševčovič Diferenciálny a integrálny počet funkcií viac premenných v príkladoch Knižničné a edičné centrum FMFI UK, 192 pp. (in Slovak). ISBN: 978-80-89186-54-9
M. Barnovská, K. Smítalová, Matematická analýza III, Skriptum UK v Bratislave, 1983

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution
Total number of evaluated students: 832

A	B	C	D	E	FX
46,88	22,72	17,55	7,21	5,53	0,12

Lecturers: Mgr. Martin Kollár, PhD., RNDr. Ľubica Kossaczká, CSc.

Last change: 12.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-540/00	Mathematical Analysis Classes (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: 2 written exams, class activity
Indicative assessment scale: A 92%, B 84%, C 76%, D 68%, E 60%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will master the basics of the integral number of functions of several real variables. They will be able to compute multidimensional definite integrals and curve integrals.

Class syllabus:
Multiple integrals. Line and surface integrals, Green's formula, Ostrogradskij and Stokes theorem. Parametric integrals. Fourier series.

Recommended literature:
Zbierka úloh z vyššej matematiky : 4. časť / Jozef Eliaš ... [et al.]. Bratislava : Alfa, 1979
Sbornik zadač i upražnenij po matematičeskomu analizu / B. P. Demidovič. Moskva : Fizmatgiz, 1963
Martin Kollár, Ľubica Kossaczká, Daniel Ševčovič Diferenciálny a integrálny počet funkcií viac premenných v príkladoch Knižničné a edičné centrum FMFI UK, 192 pp. (in Slovak). ISBN: 978-80-89186-54-9
M. Barnovská, K. Smítalová, Matematická analýza IV, Skriptum UK v Bratislave, 1984.
Eliaš J., Horváth J., Kajan J., Zbierka úloh z vyššej matematiky, 4. časť, Bratislava, Alfa, 1972.

Languages necessary to complete the course:
Slovak and English

Notes:

Past grade distribution Total number of evaluated students: 786					
A	B	C	D	E	FX
53,18	20,87	13,61	8,14	3,94	0,25
Lecturers: Mgr. Martin Kollár, PhD., RNDr. Ľubica Kossaczká, CSc.					
Last change: 12.03.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-215/15	Matrix Algebra for Statisticians

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 3.

Educational level: I.

Prerequisites: FMFI.KAG/1-MAT-160/15 - Linear Algebra and Geometry (2) or FMFI.KAG/1-DAV-104/20 - Linear Algebra

Course requirements:
Evaluation based on: tests (teaching period), written and oral exam
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60 (30 written exam + 30 oral exam)

Learning outcomes:
The students will deepen their knowledge of matrices and their properties. They will familiarize themselves with the concepts of matrix algebra that are necessary or useful for various methods of statistics and data analysis.

Class syllabus:
Block matrices, matrix as a linear mapping, systems of linear equations. Column and null space, rank, inverse matrix. Elimination and LU decomposition. Orthogonal matrices and QR decomposition. The space of matrices, matrix norm, trace. Generalized inverse and Moore-Penrose pseudoinverse. Projection matrices, least squares problem. Positive (semi)definite matrices. Eigenvalues and eigenvectors, matrix powers, spectral decomposition. Singular decomposition.

Recommended literature:
Rosa S, Harman R: Maticová algebra pre štatistiku a analýzu dát, electronic study materials, 2021;
Strang G: Linear Algebra and Learning From Data, Wellesley - Cambridge Press, 2019;
Harville D A: Matrix Algebra From a Statistician's Perspective, Springer, 1997

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 198					
A	B	C	D	E	FX
26,26	20,2	19,19	15,15	15,66	3,54
Lecturers: Mgr. Samuel Rosa, PhD., prof. Mgr. Radoslav Harman, PhD.					
Last change: 21.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-540/00	Models in Health Insurance

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1)

Course requirements:
Preliminary semester evaluation: homeworks(20%) and a test(20%)
Examination: written examination
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 40/60

Learning outcomes:
Upon the succesful completion of the course the student will be able to use the multiple state Markov model to calculate probabilities and actuarial values used in health insurance or critical illness insurance. A similar approach may be used in other models (unemployment, etc.)

Class syllabus:
Discrete time Markov chain, transition probabilities, forces of transition. Chapman-Kolmogorov equation, differential equations for occupation probabilities and transition probabilities in multidecrement models and in the three state model active-ill-dead. Maximal likelihood estimates of forces o transition and their properties.
Multiple decrement tables, central rates of decrement. Single decrement tables, independent and dependent rates of decrement.
Semimarkov approach to the three state model, splitting of states. Application of models to health insurance: benefits, premiums, and reserves. Critical illness and dread disease insurance models.

Recommended literature:
Škrovánková, Bíliková: Penzijné a nemocenské poistenie, Ekonóm 2002; Janková, Kilianová, Brunovský, Bokes: Markovove reťazce a ich aplikácie, Epos, Bratislava 2014; Dickson D, Hardy M, Waters H:Actuarial mathematics for life contingent risks, Cambridge University Press 2009

Languages necessary to complete the course:

Notes:

Past grade distribution Total number of evaluated students: 230					
A	B	C	D	E	FX
17,39	10,87	21,3	22,17	23,04	5,22
Lecturers: doc. RNDr. Katarína Janková, CSc.					
Last change: 22.06.2022					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-DAV-304/20	Network Science

Educational activities:
Type of activities: course
Number of hours:
per week: 4 **per level/semester:** 52
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 6.

Educational level: I., II.

Prerequisites:

Course requirements:
Intermittent assessment: homework (30%), project (15%), project presentation (5%)
Exam: written (50%)
To successfully complete the course, student has to obtain at least 50% of points on the final exam
Final grade: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
Complex systems can often be represented as a network of a number of interacting components. The aim of the course is to get explore examples of complex networks in applications in physics, informatics, biology and social sciences, as well as with algorithmic, computational and statistical methods for the analysis of their behavior.

Class syllabus:
1. Introduction to networks.
2. Basic concepts and algorithms in graph theory (optimal paths, optimal flows).
3. Measures and metrics on networks.
4. Structure of large networks.
5. Random network models and their characteristics (Erdős-Rényi, Watts-Strogatz, Barabási-Albert).
6. Dynamics on networks (evolutionary algorithms, percolation, epidemiological models, synchronization on networks).

Recommended literature:
Grafové algoritmy / Ján Plesník. Bratislava : Veda, 1983
Graphs, networks, and algorithms / Dieter Jungnicke. Berlin : Springer, 2005
A-L. Barabási, Network Science, 2015 , dostupné na webe (http://networksciencebook.com/).
M.E.J. Newman, Networks - An introduction , Oxford Univ Press, 2010.
D. Easley and J. Kleinberg, Networks, Crowds and Markets, Cambridge Univ Press, 2010, , dostupné na webe (https://www.cs.cornell.edu/home/kleinber/networks-book/)

Languages necessary to complete the course:

Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 125

A	B	C	D	E	FX
22,4	24,8	8,0	26,4	14,4	4,0

Lecturers: doc. Mgr. Richard Kollár, PhD., Mgr. Katarína Boďová, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-571/22	Optimization and Computational Methods

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-EFM-250/00 - Mathematical Analysis (4) or FMFI.KMANM/1-MAT-250/22 - Mathematical Analysis (4)

Course requirements:
Evaluation based on: homeworks (teaching period), oral exam
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 60/40

Learning outcomes:
The students will understand the basics of the optimization theory. They will also learn to solve optimization and other computational problems by using the statistical software R. This will allow them to deal with optimization and computational problems that arise in statistics, insurance mathematics and data analysis.

Class syllabus:
Basic concepts of mathematical optimization. Constrained and unconstrained optimization – univariate and multivariate. Iterative solution methods (e.g., gradient method, Newton method). Convex optimization. Duality. Solving optimization problems using statistical software. Effective programming in statistical software – computations and simulations.

Recommended literature:
Hamala M, Trnovská M: Nelineárne programovanie, teória a algoritmy, EPOS, 2013;
Boyd S, Vandenberghe L: Convex optimization, Cambridge University Press, 2004

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 28

A	B	C	D	E	FX
42,86	28,57	21,43	0,0	7,14	0,0

Lecturers: Mgr. Samuel Rosa, PhD.

Last change: 18.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-132/23	Participation in Empirical Research

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2., 4., 6.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

A	B	C	D	E	FX
89,6	1,49	1,49	0,0	2,97	4,46

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-MXX-132/23	Participation in Empirical Research

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1., 3., 5.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:

Learning outcomes:

Class syllabus:

Recommended literature:

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 202

A	B	C	D	E	FX
89,6	1,49	1,49	0,0	2,97	4,46

Lecturers: Mgr. Xenia Daniela Poslon, PhD.

Last change: 06.09.2023

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-110/00	Physical Education and Sport (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 0

Recommended semester: 1.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Orientation in the history of the selected sports discipline, mastering the basic principles of compensation of mostly mental burdens of the individual. Creating a positive, lasting relationship to physical education and sports in the sense of calocagation. Mastering the demands for the development of motor abilities, skills, proper technique of performing individual movements in individual sports, individual game activities in collective sports games.

Class syllabus:
Introduction to the basic history of the selected sport, with the basic principles of compensation of one-sided psychological burden of the individual's body. Development of basic motor skills with a stop to all kinds of endurance, coordination, increasing the level of joint mobility. Training of individual game activities in collective sports games. In individual sports disciplines, practice of basic techniques of individual elements.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 7493

A	B	C	D	E	FX
92,81	1,52	0,23	0,0	0,08	5,37

Lecturers: Mgr. Ladislav Mókus, PaedDr. Dana Mašlejová, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD.,

Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová
Last change: 16.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-120/22	Physical Education and Sport (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Addressing a positive and lasting relationship with physical education and sport by understanding the importance of physical development and maintaining its optimal level throughout life. The use of strength and other motor skills to more rationally manage the game activities of the individual, while improving the acquisition of more complex elements of technology. In everyday life in providing basic necessities.

Class syllabus:
Completing a positive lasting relationship to physical education and sport. Development of motor skills with a focus on the development of strength, with an emphasis on dynamic strength and endurance in strength. In collective sports games, improving individual game activities, practicing basic game combinations, playing with modified rules, tasked games. In individual sports disciplines, the development of motor abilities and skills necessary for the acquisition of more complex elements of lower difficulty techniques.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 5850

A	B	C	D	E	FX
95,61	1,5	0,14	0,09	0,05	2,62

Lecturers: Mgr. Tomáš Kuchár, PhD., PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD.,

Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová
Last change: 15.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-210/00	Physical Education and Sport (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
To practise game combinations, tactical - mechanical elements in basketball, volleyball, soccer, floorball, ice hockey, badminton, competition rules in the sports specialization.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 3440

A	B	C	D	E	FX
98,14	0,44	0,09	0,03	0,0	1,31

Lecturers: Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 16.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-220/00	Physical Education and Sport (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Preparation for sport championships of the Faculty in the chosen sport at modified rules. The selection of talented students into the teams of the University and Faculty leagues and other faculty sport events.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2957

A	B	C	D	E	FX
97,94	0,17	0,1	0,03	0,0	1,76

Lecturers: Mgr. Tomáš Kuchár, PhD., Mgr. Ladislav Mókus, Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-310/00	Physical Education and Sport (5)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Preparation and participation of individuals and teams in the system of university sport competitions and sport events.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 2264

A	B	C	D	E	FX
98,63	0,35	0,09	0,0	0,0	0,93

Lecturers: Mgr. Tomáš Kuchár, PhD., Mgr. Ladislav Mókus, Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-320/22	Physical Education and Sport (6)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 6.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-MXX-320/00

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:

Class syllabus:
Using the communication in the physical education and sport and organizing the sport championships to achieve expressive motion of the sport and health in a valuable orientation the students.

Recommended literature:

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 205

A	B	C	D	E	FX
94,63	0,49	0,49	0,0	0,0	4,39

Lecturers: PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, Mgr. Jana Leginusová, Mgr. Tomáš Kuchár, PhD., PaedDr. Mikuláš Ortutay, Mgr. Martin Dovičák, PhD., Mgr. Júlia Raábová, PhD., Mgr. Branislav Nedbálek, PhD., Mgr. Tomáš Lovecký, Mgr. Martina Maheľová, PaedDr. Lucia Ondrušová

Last change: 15.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.VC/1-EFM-535/00	Principles of Accounting

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Continuous assessment: individual problem solving, continuous testing
Indicative assessment scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
The student masters the basics of internationally accepted accounting principles.

Class syllabus:
Accounting as the language of business, introduction to financial statements, accounting process, accounting principles, detailed characterization of the main balance sheet accounts, cash flow statement, financial statement analysis.
The course is based on the approach adopted in the international accounting standards IAS/IFRS

Recommended literature:
Financial Accounting and Reporting : A Global Perspective / Hervé Stolowy, Michel J. Lebas. London : Thomson Learning, 2006
Hervé Stolowy and Michel J. Lebas: Financial Accounting and Reporting. A global perspective
Anna Šlosárová a kolektív: Analýza účtovnej závierky
IASB Framework for the Preparation and Presentation of Financial Statements
Zákon o účtovníctve č. 431/2002 Z.z. v znení neskorších predpisov

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 531

A	B	C	D	E	FX
80,6	10,55	5,65	2,07	0,94	0,19

Lecturers: doc. RNDr. Peter Mederly, CSc.

Last change: 09.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-551/22	Probability Distributions

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1) or FMFI.KAMŠ/1-UMA-302/22 - Probability Measure and Mathematical Statistics (1) or FMFI.KAMŠ/1-DAV-201/20 - Fundamentals of Probability and Statistics

Recommended prerequisites:
1-MAT-282 Probability and statistics (2)

Course requirements:
Preliminary evaluation: tests (60%), project (40%)
Rating scale: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will gain knowledge of some discrete and continuous probability distributions. They will learn to derive the characteristics of individual distributions and estimate their parameters. They will be able to recognize common classes of probability distribution.

Class syllabus:
Theory of probability distributions. Characteristic functions, generating functions. Moments and moment generating functions. Classes of probability distributions. The most frequently used distributions and estimators of their parameters. Applications.

Recommended literature:
Ross S M: Introduction to probability models, [S.l.]: Academic Press, 2010;
Hogg R V, Tanis E A, Dale L: Probability and statistical inference, Harlow: Pearson Education, 2015

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 81

A	B	C	D	E	FX
43,21	22,22	17,28	4,94	9,88	2,47

Lecturers: Mgr. Lívia Rosová, PhD.

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-520/22	Probability Theory

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Course requirements:

Learning outcomes:

Class syllabus:
Stable distributions: definition, explicit densities, characteristic functions, properties. Generalised central limit theorem for sums of independent identically distributed (iid) variables with infinite second moment. Large deviation theory for sums of iid variables: moment generating function, exponential tilting, deviation function. Heavy-tailed and subexponential distributions: single big jump principle for sums of iid subexponential variables.

Recommended literature:
x

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 297

A	B	C	D	E	FX
16,16	15,15	16,5	19,19	26,94	6,06

Lecturers: doc. Mgr. Pavol Bokes, PhD.

Last change: 24.11.2021

Approved by: doc. RNDr. Katarína Janková, CSc.

STATE EXAM DESCRIPTION

Academic year: 2026/2027	
University: Comenius University Bratislava	
Faculty: Faculty of Mathematics, Physics and Informatics	
Course ID: FMFI.KAMŠ/1-PMA-951/15	**Course title:** Probability and Statistics
Number of credits: 2	
Educational level: I.	
Course requirements: State exam. Scale of assessment (preliminary/final): 0/100	
Learning outcomes: The student passes the state exam from probability and mathematical statistics.	
Class syllabus: The student draws questions from a given field of questions from profile courses related to probability theory and statistics. After a short preparation he answers the questions and additional questions of the members of the committee.	
State exam syllabus:	
Recommended literature: Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava : Univerzita Komenského, 2013 Statistical inference / George Casella, Roger L. Berger. Belmont: Cengane Learning, 2002. Základy matematické statistiky / Jiří Anděl. Praha: Matfyzpress, 2005	
Languages necessary to complete the course: Slovak, English	
Last change: 13.03.2022	
Approved by: doc. RNDr. Katarína Janková, CSc.	

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MAT-281/00	Probability and Statistics (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 3.

Educational level: I.

Prerequisites: (FMFI.KMANM/1-MAT-150/00 - Mathematical Analysis (2) or FMFI.KAMŠ/1-EFM-130/00 - Mathematical Analysis (2)) and (FMFI.KAG/1-MAT-120/15 - Linear Algebra and Geometry (1) or FMFI.KAG/1-MMN-120/22 - Linear Algebra and Geometry (1) or FMFI.KAG/1-EFM-121/15 - Linear Algebra and Geometry (1))

Course requirements:
Preliminary semester evaluation: a test
Examination: written examination
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 50/50

Learning outcomes:
After completing the course the student will be able to use classical probability models, axiomatic approach to the definition of probability. He will master one dimensional discrete and continuous random variables. He will be given an introduction to selected statistical procedures: point and interval estimates of parameters sampling normal distribution.

Class syllabus:
Probability space. Classical probability models. Random variable and distribution function. Elementary discrete and continuous distributions, expectation and variance. Independence and correlation. Normal distribution and the central limit theorem. Random sample, sample mean, sample variance. Sampling normal distribution. Estimation of parameters, maximal likelihood, confidence intervals for the mean of a normal distribution.

Recommended literature:
Janková, K., Pázman, A.: Pravdepodobnosť a štatistika, Vydavateľstvo UK 2011
Harman, R., Honschová, E., Somorčík, J.: Zbierka úloh zo základov teórie pravdepodobnosti, Paci Bratislava 2009
G.R.Grimmett, D. Stirzaker: Probability and Random Processes. Oxford University Press 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1626

A	B	C	D	E	FX
17,59	12,36	17,77	21,89	23,8	6,58

Lecturers: doc. RNDr. Katarína Janková, CSc., Mgr. Erika Lejtrich, Mgr. Adrián Hodúr

Last change: 09.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-MAT-282/00	Probability and Statistics (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1)

Course requirements:
Preliminary assessment: test
Examination: written examination
Approximate final assessment: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 30/70

Learning outcomes:
After completing the course the student will master multivariate discrete and continuous distributions. He will be able to calculate distributions of sums, products and ratios of independent random variables. He will know the technique of characteristic functions and will be able to apply it to the multidimensional normal distribution. The knowledge of probability methods will be applied to selected statistical problems of parameter estimation and hypotheses testing.

Class syllabus:
Multiple random variables, their distribution and characteristics. Elementary introduction to Lebesgue integral. Marginal and conditional distributions and densities. Independence, sums of independent random variables. Characteristic functions and their applications. Convergence of sequences of random variables, central limit theorems and weak law of large numbers. Statistical inference: estimation of parameters, maximal likelihood estimates, hypothesis testing. Neyman Pearson lemma. Regression models: least squares and maximal likelihood estimation of parameters. Goodness of fit tests.

Recommended literature:
Janková, K., Pázman, A.: Pravdepodobnosť a štatistika, Vydavateľstvo UK 2011
K. Zvára, J. Štěpán: Pravděpodobnost a matematická statistika, Matfzypress 1997
Harman, R., Honschová, E., Somorčík, J.: Zbierka úloh zo základov teórie pravdepodobnosti, Paci Bratislava 2009
G.R.Grimmett, D. Stirzaker: Probability and Random Processes. Oxford University Press 2001

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 1502

A	B	C	D	E	FX
18,44	10,45	15,31	19,91	27,63	8,26

Lecturers: doc. RNDr. Katarína Janková, CSc., Mgr. Erika Lejtrich, Mgr. Adrián Hodúr, Mgr. Pál Somogyi, PhD.

Last change: 09.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-754/16	Probability and Statistics Classes (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 1 **per level/semester:** 13
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 3.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary evaluation: tests.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
After completing the course, students will be able to solve the problems of one-dimensional discrete and continuous random variables. Furthermore, students will be able to solve some statistical problems.

Class syllabus:
Probability space. Classical probability models and discrete distributions. Random variable and its distribution function. Basic types of discrete and continuous random variables. Expected value and variance. Independence and correlation coefficient. Normal distribution and central limit theorem. Random sample, its mean, sample variance. Random sample from normal distribution. Point estimates of unknown parameters, maximum likelihood estimation. Confidence intervals for the mean of the normal distribution.

Recommended literature:
Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava : Univerzita Komenského, 2011
Zbierka úloh zo základov teórie pravdepodobnosti / Radoslav Harman, Erika Hönschová, Ján Somorčík. Bratislava : PACI, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 521

A	B	C	D	E	FX
67,56	6,72	8,83	7,29	4,8	4,8

Lecturers: Mgr. Ján Veselý, Mgr. Erika Lejtrich, Mgr. Adrián Hodúr
Last change: 21.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-753/15	Probability and Statistics Classes (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 1 **per level/semester:** 13
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 4.

Educational level: I.

Prerequisites:

Course requirements:
Preliminary evaluation: tests.
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will practice working with multidimensional discrete and continuous probability distributions. They will be able to apply the acquired knowledge in solving selected statistical problems.

Class syllabus:
Random vectors and their characteristics. Marginal and conditional distributions. Characteristic functions. Multidimensional normal distribution and its properties. Convergence of the sequence of random variables. Central limit theorem, laws of large numbers. Statistical inference, parameter estimation, maximum likelihood method, statistical hypothesis testing.

Recommended literature:
Pravdepodobnosť a štatistika / Katarína Janková, Andrej Pázman. Bratislava : Univerzita Komenského, 2011
Zbierka úloh zo základov teórie pravdepodobnosti / Radoslav Harman, Erika Hönschová, Ján Somorčík. Bratislava : PACI, 2009

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 497

A	B	C	D	E	FX
67,81	11,27	6,64	6,04	3,62	4,63

Lecturers: Mgr. Erika Lejtrich, Mgr. Adrián Hodúr, Mgr. Pál Somogyi, PhD.

Last change: 21.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-MAT-130/22	Programming (1)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 1.

Educational level: I.

Prerequisites:

Course requirements:
Active work on practice lessons at which a student solve assigned tasks is required. At least 80% of completed practice lessons are need to be admitted to the final examination. During the final examination, the student solves a practical assignment on a computer and according to obtained score, he/she receives a grade: A (90%), B (80%), C (70%), D (60%), E (50%) or FX (less than 50%).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Students are able to solve problems algorithmically, to process large number of data and to communicate with the user using basic constructions and data types of programming language Python.

Class syllabus:
Expressions and variables.
Loops.
Program branching.
Subroutines and functions.
List.
Solving mathematical and geometrical problems.
User interaction.

Recommended literature:
Salanci, L.: www.salanci.sk - web page with lectures and exercises

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 1134					
A	B	C	D	E	FX
51,76	9,08	6,0	6,7	8,02	18,43
Lecturers: doc. RNDr. Ľubomír Salanci, PhD.					
Last change: 22.02.2023					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KDMFI/1-MAT-170/22	Programming (2)

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 2 **per level/semester:** 26 / 26
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: I.

Prerequisites: FMFI.KDMFI/1-MAT-130/22 - Programming (1)

Recommended prerequisites:
Programming 1

Course requirements:
Active work on practice lessons at which a student solve assigned tasks is required. At least 80% of completed practice lessons are need to be admitted to the final examination. During the final examination, the student solves a practical assignment on a computer and according to obtained score, he/she receives a grade: A (90%), B (80%), C (70%), D (60%), E (50%) or FX (less than 50%).
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Using object-oriented programming in the Python programming language, students are able to solve problems algorithmically, process structured data and interact with the user.

Class syllabus:
Strings.
Objects.
Many objects.
Turtle graphics.
Recursion.
Files,
Solving mathematical and geometrical problems.
User interaction.

Recommended literature:
Salanci, L.: www.salanci.sk - web page with lectures and exercises

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution Total number of evaluated students: 1960					
A	B	C	D	E	FX
34,85	16,48	12,19	12,4	17,55	6,53
Lecturers: doc. RNDr. Ľubomír Salanci, PhD.					
Last change: 22.02.2023					
Approved by: doc. RNDr. Katarína Janková, CSc.					

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-751/13	Programming in R

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Evaluation based on: two tests (test1 40%, test 2 60%, teaching period)
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Students will learn to work in the R environment, program simple functions and work with data frames.

Class syllabus:
Working with envoronment and R workspaces, basic operations.
Manipulating variables, vectors, matrices and data frames.
Conditional statements and flow control. Basic programming techniques, writing scripts and functions. Working with data files, elementary statistical operations. Using graphical procedures for data visualization. Basic optimization functions. Creating documents with R markdown.

Recommended literature:
Matloff N: The art of R programming : A tour of statistical software design, San Francisco, No Starch Press (2011); Filová L: Programovanie v jazyku R, study materials (2021)

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 294

A	B	C	D	E	FX
49,32	14,29	9,52	12,24	9,52	5,1

Lecturers: Mgr. Radoslav Hurtiš, PhD., doc. Mgr. Lenka Filová, PhD.

Last change: 24.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-161/00	Russian Language (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
To master the fundamentals of general Russian. The language level is A1.
Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts.
The subject provides a course in Russian language for beginners.

Recommended literature:
The textbook: : Точка Ру A1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 746

A	B	C	D	E	FX
57,77	16,62	11,13	4,16	1,74	8,58

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-162/00	Russian Language (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
To master the fundamentals of general Russian.
Learning the Cyrillic (Russian) alphabet, gaining basic language competence, building up skills and confidence in dealing with unfamiliar authentic and semi-authentic texts.
The subject continues the program of Russian language (1) and provides a course of Russian for beginners.

Recommended literature:
Textbook: Точка Ру A1 (Ольга Долматова, Екатерина Новачац), pracovné karty Падежи 1 (Л.С. Безкоровайная, В.Е. Штыленко).

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 435

A	B	C	D	E	FX
63,91	16,09	8,97	3,91	0,92	6,21

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-261/00	Russian Language (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Basic communication in Russian, developing other Russian language skills - listening comprehension, reading and writing.

Class syllabus:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
Точка Ру A2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 215

A	B	C	D	E	FX
68,84	17,67	9,3	2,33	0,0	1,86

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-262/00	Russian Language (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.

Class syllabus:
Learning the handwritten Russian (Russian Cursive Cyrillic), developing further language skills, gaining knowledge of Russian culture, history and way of life, pre-intermediate to intermediate grammar and vocabulary.
The course "Russian for Intermediate Students" is a follow-up to "Russian for Beginners". The subject of the course is general Russian in the range appropriate to the given level.

Recommended literature:
Точка Ру A2 (Ольга Долматова, Екатерина Новачац) a Short Stories in Russian (Olly Richards, Alex Rowlings)

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 153

A	B	C	D	E	FX
74,51	14,38	7,19	2,61	0,65	0,65

Lecturers: Viktoria Mirsalova

Last change: 20.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-760/00	Sampling Theory

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2) or FMFI.KAMŠ/1-DAV-201/20 - Fundamentals of Probability and Statistics

Course requirements:
Preliminary semester evaluation: test
Final examination: written examination
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%

Learning outcomes:
The student will master basic sampling schemes used in sampling from a finite population. He will be able to find interval estimates for unknown population parameters.

Class syllabus:
Simple random sampling, sampling without and with replacement. Estimate of population mean and proportion. Stratified random sampling. Stratification with proportional allocation. Optimum allocation, Neyman allocation. Systematic sampling. Elements of probabilistic random sampling. Inclusion probabilities, Horwitz-Thompson estimate and its properties. Bernoulli sampling, Poisson sampling.

Recommended literature:
Kalas, J.: Vybrané kapitoly z teórie náhodného výberu, skriptá MFF UK Bratislava 1996.
Cochran, W.G. Sampling techniques, Wiley and Sons, New York,1977.
Särndal, C. E., Swensson, B., Wretman, J.: Model Assisted Survey Sampling, Springer 1992.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 150

A	B	C	D	E	FX
28,0	17,33	20,67	14,67	11,33	8,0

Lecturers: doc. RNDr. Katarína Janková, CSc.

Last change: 26.11.2021
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAI/2-IKVa-192/19	Science, Technology and Humanity: Opportunities and Risks

Educational activities:
Type of activities: seminar
Number of hours:
per week: 3 **per level/semester:** 39
Form of the course: on-site learning

Number of credits: 5

Recommended semester: 2.

Educational level: I., I.II., II.

Prerequisites:

Course requirements:
Semestral evaluation: active participation
Final evaluation: essay
Weight of the final evaluation: 60%
To achieve an A, 90% is needed, for B at least 80%, for C 70%, for D, 60% and for an E, at least 50% of overall assessment.

Learning outcomes:
The students will gain awareness of the contemporary and potential future challenges posed by scientific and technological innovations and their impact on human behaviour, culture and society.

Class syllabus:
Big data: privacy, politics and power,
Internet of things, it usefulness and threats,
Assistant AI and its place in future society,
Job market and inequality,
Enhancements and human rights and the right to change self and others,
Initiatives for responsible research,
Artificial minds,
Hybridization between species and between AI and organic minds,
Future of minds and trans-humanism,
Artificial emotional intelligence,
An after human era.

Recommended literature:
- S. Russell: Human compatible. Artificial intelligence and the problem of control. Viking, 2019.
- J. Havens: Heartificial intelligence. Embracing our humanity to maximize machines. Penguin, 2016.
- P. Boddington: Towards a code of ethics for artificial intelligence. Springer, 2017.
- M. Shanahan: The technological singularity. MIT Press, 2015.

- C. MacKellar, C.: Cyborg Mind: What Brain–Computer and Mind–Cyberspace Interfaces Mean for Cyberneuroethics. Berghahn Books, 2019.
- G. Bel, J. Gemmell: Total Recall, How the e-Memory Revolution will change everything. Dutton, 2009.
- S. Zuboff: The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power. PublicAffairs, 2019.
- C. O'Neil: Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. Crown Publishers, 2016.
- M. Tegmark: Life 3.0. Allen Lane, 2017.

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 146

A	B	C	D	E	FX
40,41	21,92	16,44	6,85	4,79	9,59

Lecturers: doc. RNDr. Martin Takáč, PhD., PhDr. Ing. Tomáš Gál, PhD.

Last change: 28.02.2020

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-171/20	Slovak Language for Foreign Students (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.

Class syllabus:
The sylabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1).

Recommended literature:
Krížom- Krážom Slovenčina 1, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 155

A	ABS	B	C	D	E	FX	NEABS
40,65	21,29	7,1	4,52	0,65	1,29	21,29	3,23

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-172/20	Slovak Language for Foreign Students (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to learn the fundamentals of the Slovak language with the focus on basic communication as well as all other language skills- listening comprehension,reading and writing.

Class syllabus:
The sylabus is targeted at the comprehension of the basics of the Slovak language for the absolute beginners (A1) and this course is a follow up course to the Slovak language course 1.

Recommended literature:
Krížom- Krážom Slovenčina 1, additional material to further support the covered topics

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 87

A	ABS	B	C	D	E	FX	NEABS
63,22	18,39	1,15	1,15	0,0	0,0	9,2	6,9

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-271/20	Slovak Language for Foreign Students (3)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 2.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 32

A	ABS	B	C	D	E	FX	NEABS
59,38	3,13	18,75	3,13	3,13	0,0	12,5	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-272/20	Slovak Language for Foreign Students (4)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I., I.II., II., III.

Prerequisites:

Course requirements:
tests
Course prerequisites:
https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
This course is aimed for foreign students to better comprehend all the language skills important to enable correct usage of the Slovak language – listening comprehension, reading, writing and speaking.

Class syllabus:
The sylabus is targeted at the comprehension of all the language skills of the Slovak language , and it is a follow up course to the Slovak language course 3.

Recommended literature:
Krížom-Krážom Slovenčina 2, additional material to further support the covered topics.

Languages necessary to complete the course:

Notes:

Past grade distribution
Total number of evaluated students: 25

A	ABS	B	C	D	E	FX	NEABS
84,0	0,0	4,0	4,0	0,0	0,0	8,0	0,0

Lecturers: Mgr. Aneta Barnes

Last change: 21.06.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KMANM/1-MAT-733/19	Software MATLAB

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 3.

Educational level: I., I.II., II.

Prerequisites:

Antirequisites: FMFI.KMANM/1-MAT-731/00 and FMFI.KMANM/1-MAT-732/00

Course requirements:
Continuous assessment: activity
Examination: group project, practical computer exam
Scale of assessment (preliminary/final): 20/80

Learning outcomes:
Students will learn the basics of using MATLAB software. They will be able to use MATLAB to calculate some mathematical problems, read files or write to files, plot computed data, create complex functions for reuse and create a graphical user interface GUI for their programs.

Class syllabus:
Format and conversion of variables, vectors and matrices
Programming environment, so-called M-file
Reading from a file and protting data
Creating functions
Graphical GUI environment

Recommended literature:
MATLAB - SIMULINK I / Stefan Kozak, Slavomir Kajan. Bratislava: Slovak University of Technology, 1999 Matlab / Jela Babušíková. Bratislava: FMFI UK Library and Publishing Center, 2007
Kozák Š., Kajan S., Matlab - Simulink, 1. Slovak University of Technology in Bratislava, 1999. ISBN Dušek F., MatLab and Simulink, University of Pardubice, 2000
mathworks.com/help

Languages necessary to complete the course:
slovak

Notes:

Past grade distribution
Total number of evaluated students: 150

A	B	C	D	E	FX
22,67	14,0	13,33	12,67	19,33	18,0

Lecturers: RNDr. Patrik Mihala, PhD.

Last change: 15.03.2022

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-752/25	Solving Problems in Probability and Statistics with R

Educational activities:
Type of activities: course
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 4.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-281/00 - Probability and Statistics (1) or FMFI.KAMŠ/1-DAV-201/20 - Fundamentals of Probability and Statistics

Recommended prerequisites:
the basics of the R language, or good skill in programming in another language

Antirequisites: FMFI.KAMŠ/1-PMA-752/14

Course requirements:
Assessment during the term: homework (60%), test (40%).
Grading: A: 90 and more, B: [80, 90), C: [70, 80), D: [60, 70), E: [50, 60), FX: less than 50
Scale of assessment (preliminary/final): 100/0

Learning outcomes:
Student gains skills in applying the knowledge from probability and statistics to solve problems, including real life applications.

Class syllabus:
Combinatorial probability, conditional probabilities, Bayes theorem. Discrete and continuous random variables and random vectors - computation of probabilities, moments, transformations, computer simulations, applications. Selected statistical methods.

Recommended literature:
Jiří Anděl: Matematika náhody. Praha, MatfyzPress, 2000.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 0

A	B	C	D	E	FX
0,0	0,0	0,0	0,0	0,0	0,0

Lecturers: doc. RNDr. Beáta Stehlíková, PhD.

Last change: 02.05.2025
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-115/15	Sports in Nature (1)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%.
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 310

A	B	C	D	E	FX
99,03	0,32	0,32	0,0	0,0	0,32

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký

Last change: 16.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-215/15	Sports in Nature (2)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide sports equipment.

Past grade distribution
Total number of evaluated students: 298

A	B	C	D	E	FX
92,62	0,0	0,0	0,0	0,34	7,05

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-216/18	Sports in Nature (3)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 3.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-UXX-151/22

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Acquisition and development of basic motor skills and abilities in selected sports: skiing and snowboarding. Mastering the correct technique of performing individual movements, which are necessary for skiing and snowboarding.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: skiing, snowboarding. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ does not rent ski equipment.

Past grade distribution
Total number of evaluated students: 58

A	B	C	D	E	FX
98,28	0,0	0,0	0,0	0,0	1,72

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KTV/1-MXX-217/18	Sports in Nature (4)

Educational activities:
Type of activities:
Number of hours:
per week: **per level/semester:**
Form of the course: on-site learning

Number of credits: 1

Recommended semester: 4.

Educational level: I., I.II.

Prerequisites:

Antirequisites: FMFI.KTV/1-UXX-152/22

Course requirements:
Grades: A 90%, B 80%, C 70%, D 60%, E 50%
The condition for the award of 1 or 2 credits is the completion of a multi-day course in its full scope, or the completion of one-day courses in the scope of 4 days. Candidates can apply to the leaders of individual courses. From the presented offer of courses, you can choose the one that suits your interests, abilities and deadlines.

Learning outcomes:
Creating a positive and lasting relationship with physical activity. Acquisition and mastery of basic motor skills and abilities in outdoor sports: windsurfing, beach volleyball, water tourism - river rafting, hiking and other sports according to interest. Training and improving the technique needed for the sports.

Class syllabus:
The student can sign up for the outdoor sports courses offered by the department: water tourism - river rafting, windsurfing, beach volleyball, hiking and other hobby sports. The lessons in the courses are focused on the development of basic and special movement skills and, mastering the techniques needed for the sports.

Recommended literature:

Languages necessary to complete the course:
Slovak

Notes:
KTVŠ will provide material equipment.

Past grade distribution
Total number of evaluated students: 41

A	B	C	D	E	FX
90,24	0,0	0,0	0,0	0,0	9,76

Lecturers: Mgr. Martin Dovičák, PhD., Mgr. Tomáš Kuchár, PhD., Mgr. Jana Leginusová, PaedDr. Dana Mašlejová, Mgr. Ladislav Mókus, PaedDr. Mikuláš Ortutay, Mgr. Júlia Raábová, PhD., Mgr. Tomáš Lovecký
Last change: 16.06.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-EFM-330/00	Statistical Methods

Educational activities:
Type of activities: lecture
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 3

Recommended semester: 5.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Recommended prerequisites:
Probability and statistics (2) 1-MAT-282

Course requirements:
written exam
Approximate grade thresholds: A 90%, B 80%, C 70%, D 60%, E 50%
Scale of assessment (preliminary/final): 0/100

Learning outcomes:
Students will be able to apply some basic methods of mathematical statistics, while understanding their principles. They will also understand some general statistical techniques and they will be able to apply them.

Class syllabus:
Properties of sample mean and sample variance. t-tests and F-tests. Basic confidence intervals and the Bonferroni method. How to create a test? How to measure test quality? Neyman-Pearson's lemma and UMP tests for compound hypotheses. How to measure the quality of estimates? BLUE. BUE and its uniqueness. Fisher information and Cramér-Rao inequality. Asymptotic properties of maximum likelihood estimates & tests. Wald test and score test. Bootstrap and jackknife.

Recommended literature:
Casella G, Berger R: Statistical inference. 2nd ed. Cengane Learning 2001;
Anděl J: Základy matematické statistiky. Matfyzpress 2005.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 752

A	B	C	D	E	FX
40,69	16,62	14,89	12,37	13,16	2,26

Lecturers: Mgr. Ján Somorčík, PhD.
Last change: 11.03.2022
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KAMŠ/1-PMA-570/00	Stochastic Models in Insurance

Educational activities:
Type of activities: lecture / practicals
Number of hours:
per week: 2 / 1 **per level/semester:** 26 / 13
Form of the course: on-site learning

Number of credits: 4

Recommended semester: 6.

Educational level: I.

Prerequisites: FMFI.KAMŠ/1-MAT-282/00 - Probability and Statistics (2)

Course requirements:
During the semester, the student can obtain 33% of the assessment for one written test. In order to meet the minimal condition to sit the final written exam, it is necessary to obtain at least half of the points from the semester test. To successfully complete the course, it is necessary to get at least half of the points from the exam too, which has a weight of 67%.
Grade thresholds: A: at least 90.00%; B: 89.99% – 80.00%; C: 79.99% – 70.00%; D: 69.99% – 60.00%; E: 59.99% – 50.00%; Fx: 49.99% – 0.00%.
Scale of assessment (preliminary/final): Practical work during semester 33% / final exam 67%.

Learning outcomes:
After completing the course, the student will master the collective risk model and approximations of the probability distribution of the aggregate claims. The student will be able to solve basic problems in risk and ruin theory.

Class syllabus:
The individual risk model. The collective risk model. Probability distribution of aggregate claim amount and its approximations. Stochastic processes in risk theory. Claim processes. Introduction to the ruin theory, the Cramér-Lundberg inequality.

Recommended literature:
Modern Actuarial Risk Theory Using R / Rob Kaas, Marc Goovaerts, Jan Dhaene, Michel Denuit. Second Edition, Heidelberg : Springer-Verlag, 2008;
Insurance Risk and Ruin / David C. M. Dickson. First Edition, New York : Cambridge University Press, 2005;
Non-Life Insurance Mathematics / Thomas Mikosch. Second Edition, Heidelberg : Springer-Verlag, 2009;
study materials of the lecturer.

Languages necessary to complete the course:
Slovak, English

Notes:

Past grade distribution
Total number of evaluated students: 192

A	B	C	D	E	FX
22,4	19,27	23,44	19,27	14,58	1,04

Lecturers: Mgr. Gábor Szűcs, PhD., Mgr. Matúš Padyšák, PhD.

Last change: 12.12.2025

Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-133/18	Supplementary English Course (1)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 1.

Educational level: I., I.II.

Prerequisites:

Course requirements:
tests, homework
Scale of assessment (preliminary/final): 100/0 credit - ongoing evaluationMinimum 65 percent of the total points for the assigned work is needed to pass the course. Points can be awarded for attendance, completed homework tasks, and short tests assigned during the course.A 100-93 %B 92-85 %C 84-77 %D 76-70 %E 69-65 %Course prerequisites:https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/

Learning outcomes:

Class syllabus:
Texts dealing with the most important topics for FMPI majors combining grammar revision with vocabulary needed to pass the A4 English exam.

Recommended literature:
Study materials are created by the teacher and available in electronic form.
Raymond Murphy: Essential Grammar in USe, Cambridge University Press, 1998
Michael McCarthy, Felicity O'Dell: English Vocabulary in Use, Cambridge University Press, 1994

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
52,78	19,44	6,94	4,17	4,17	12,5

Lecturers: Mgr. Ing. Jana Kočvarová

Last change: 11.04.2024
Approved by: doc. RNDr. Katarína Janková, CSc.

COURSE DESCRIPTION

Academic year: 2026/2027

University: Comenius University Bratislava

Faculty: Faculty of Mathematics, Physics and Informatics

Course ID:	**Course title:**
FMFI.KJP/1-MXX-134/18	Supplementary English Course (2)

Educational activities:
Type of activities: practicals
Number of hours:
per week: 2 **per level/semester:** 26
Form of the course: on-site learning

Number of credits: 2

Recommended semester: 2.

Educational level: I., I.II.

Prerequisites:

Course requirements:
tests, homework
Scale of assessment (preliminary/final): 100/0 ENcredit - ongoing evaluation Minimum 65 percent of the total points for the assigned work is needed to pass the course. Points can be awarded for attendance, completed homework tasks, and short tests assigned during the course. A 100-93 % B 92-85 % C 84-77 % D 76-70 % E 69-65 %Course prerequisites:https://fmph.uniba.sk/microsites/kjp/katedra-jazykovej-pripravy/poziadavky-na-udelenie-priebezneho-hodnotenia-aj1aj2aj3-ostatne-kurzy/

Learning outcomes:

Class syllabus:
Texts dealing with the most important topics for FMPI majors combining grammar revision with vocabulary needed to pass the A4 English exam.

Recommended literature:
Study materials are created by the teacher and available in electronic form. Raymond Murphy: Essential Grammar in USe, Cambridge University Press, 1998 Michael McCarthy, Felicity O'Dell: English Vocabulary in Use, Cambridge University Press, 1994

Languages necessary to complete the course:
English

Notes:

Past grade distribution
Total number of evaluated students: 72

A	B	C	D	E	FX
54,17	13,89	4,17	8,33	5,56	13,89

Lecturers: Mgr. Ing. Jana Kočvarová

Last change: 11.04.2024

Approved by: doc. RNDr. Katarína Janková, CSc.